POPULAR Computing WEEKLY

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Vol 4 No 23

Sinclair seeks £15m finance and may sell C5

SINCLAIR RESEARCH has run into financial trouble for the first time in its six year history. It confirmed last week that it hopes to raise between £10 million and £15 million from industrial or other sources to rescue the company. This followed the announcement that manufacturers Thorn-Emi and Timex have extended their credit terms with Sinclair Research for two months (see separate news item on p6)

Sir Clive Sinclair plans to step down as chief executive and the company is now looking for someone to take his place. Sir Clive wishes to return to more technical work within Sinclair, but there is no possibility of his giving up the chairmanship. He has been reported to be considering selling Sinclair Vehicles, which produces the C5, to help raise money.

The value of stocks held by Sinclair, which was as high as

Sir Clive – a troubled week

£34 million a month ago (see *Popular Computing Weekly*, 2 May), is now said to be around £30 million, but Sin-

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Dixons to bundle Sinclair TV and Spectrum

THE HIGH street chain store Dixons is to sell an unusual bundling package featuring the Sinclair Spectrum Plus

For £199 the customer can buy a Spectrum Plus, flat-screen TV a ZX printer and six software titles, *Vu3D*, *Chess*, *Hungry Horace*, *Deathstar Battle-Return of the Jedi*, *Space Raiders* and *Embassy Assault*. These are all well-established titles that have been available for some time

Sinclair stopped production of the ZX printer about a year ago. The package is seen as a clearance of old stocks still held by Sinclair

The TV is currently viewed as potentially Sinclair's most successful product as Sinclair has recently won major orders with American Express and retail group Sears to sell the TV in the US

"This package has a number of interesting features, especially for people interested in innovation," said Dixons' David Gilbert. He confirmed that the package will be sold in all Dixons stores, while stocks last

Amstrad vies with Atari at Chicago

THE computer exhibition at the summer Consumer Electronics Show in Chicago from June 2-5, was the smallest for five years

Of the major hardware manufacturers in the home market, Commodore, Atari and also Amstrad took stands

Amstrad was the only British hardware manufacturer there – Sinclair, despite the impending American launch of the QL, did not take a stand

Amstrad was showing its CPC 664 with built-in 3 inch disc drive and colour monitor for the first time in the US. The CPC 664 priced at $799 (around £620) for the American market which means it will clash directly with Atari's 520ST

Atari itself only agreed to exhibit at CES at the last minute. "Originally we were not going to be at Chicago" said Atari's UK marketing manager Rob Harding. "We felt the summer show was not as important as the winter show in Las Vegas. However, the organisers requested we take a stand."

Atari has one new product which has not been shown in Europe – a prototype of a CD Rom system for the 520ST. This compact disc based storage system can store up to ½ gigabyte of information. Atari hopes to make the CD Rom available at the end of this year. No price has yet been finalised.

Commodore showed a variety of software for the C128 machine, mainly 'home management' utility packages. It also had a mouse-controlled

continued on page 4 ▶

INSIDE ❭ ENTERPRISE 128K FULL REVIEW INSIDE – p17



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View

That Sinclair is looking for as much as £15 million to 'restructure' should not be a surprise. With around £30 million tied up in stocks, and no major new product immediately on the horizon, in a market at its flattest, it is a wonder the amount needed isn't higher.

Will Sinclair get its money? The City institutions are notoriously wary of any computer companies at the moment – and even more so of the home sector. Whoever might stump up would expect a fair-sized stake in Sinclair and control over its policies. Not a pleasant prospect for an individual like Sir Clive. Even more unpleasant for him is the possibility that Sinclair Vehicles may have to be sold to help finance Sinclair Research.

One can lay much of the blame on the QL. It was intended to be the populist machine reflecting current technology – powerful enough for use in a small business, versatile enough for games. Instead, its reliability problems at launch and subsequent failure to capture the public's imagination have been painful to watch.

But Sinclair deserves to survive as a strong independent force. With his company, Sir Clive Sinclair created the home computer market in Britain. Sinclair has led the industry through the days of soaring profits and the current squeeze, offering consumers original technology at an affordable price.

What Sinclair needs now is a machine aimed directly at the existing market. Additions to the QL range would be all very well, had the QL created a market. It hasn't. The portable Pandora, or a straight 128K Spectrum would seem the best bet purely on grounds of Spectrum compatibility.



Futures . . .

Acarde Addicts Guide – biggest collection of tips and pokes ever. . . Portfolio – a business program for Spectrum owners

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Computer Trade Association Magazine of the Year

CBM announces more 'bundles'

COMMODORE has announced further bundling deals on its products, following the decision to package the Commodore 64 as a 'starter' pack with C2N and *International Soccer* (see *Popular Computing Weekly*, 30 May)

The Plus/4 is to be bundled with the 1541 disc drive, MPS 801 printer, and a suite of business software including word processor and spreadsheet by Impex, thus aiming the Plus/4 directly at the small business market. This Business Pack will cost £449, and become available in June.

"The Impex software is similar in style to *Lotus 1-2-3*, though not as sophisticated," said a Commodore spokesman. "It makes better use of the Plus/4 than the machine's in-built software which has caused some problems."

For £349.99, Commodore is offering a peripherals package comprising the 1541 disc drive, MPS 801 and software. Commodore is considering offering this package by direct mail order only.

● The 6th Commodore Computer Show is on between June 7 and June 9, when the C128 will be shown for the first time in the UK.

While the C128 will be the major hardware attraction, packages are also being launched.

Authogenic will be showing its version of *Micro Swift Spreadsheet* for the C128 machine, which makes use of the new model's extra memory and 80 column display.

The company will also be launching a new program, *Graham Gooch's Test Cricket*, a graphic simulation due for release in mid-June, at £9.95.

Domark's follow-up to *Eureka!*, the game licensed from the new James Bond movie *A View to a Kill*, and bearing the same title, will also be shown to the public for the first time, as will Commodore's own new title *International Tennis*. This continues the series comprising *International Soccer* and *International Basketball*. Commodore will also be launching the latest program in its *Music Maker* series.

The show opens at 10 am on June 7, at Novotel, Hammersmith, London. Admission costs £2 for adults and £1.50 for children.

Chicago Show

◀ continued from page 1

word processor on display, using Apple Macintosh-like menus, icons and windows. The Amiga machine was not on show but industry sources at CES suggested the Amiga may be launched next month in the US and may now cost as much as $2000 (around £1500).

Relatively few software houses exhibited in the main hall – many giving private showings in hotels instead.

Of those that did exhibit, Epyx launched *Summer Games 2* and previewed *Winter Games*, which is due out in the states in October. Access showed *Beachhead 2*, and Activision had a range of titles on display for the first time.

Hacker is a simulation/adventure centred around hacking. The player is presented with the scenario of having broken into an unknown computer system and must discover who system it is, and what it does. Activision also previewed *Boxer*, a boxing simulation, and *Slot Car Construction Kit*, where the player designs a race course on screen, and then must take part in it.

It seems likely, though not certain, that these titles will be exported to this country.

Sinclair seeks £15m

◀ continued from page 1

clair is forecasting a 20% drop in sales this year. "Our cashflow has been slow from the start of the year in terms of new orders, although the number of units sold has been high," said a Sinclair spokesman.

Thorn Emi, STC, GEC and Philips have all been reported as being approached by Sinclair for part or all of the £10-£15 million in return for a stake in the company, which could mean Sir Clive, who currently owns 85% of Sinclair Research losing overall control. It is extremely unlikely that the institutions who bought 10% of Sinclair in a private placement two years ago, would inject any more money into the company. The signs are that it would be a British company which would provide the finance. "Sir Clive's patriotism and support of British firms means he would prefer it to be a British company," the spokesman continued.

For the new chief executive, Sinclair is looking to appoint someone currently outside the company.

Plans for the £50 million semi-conductor plant for which Sinclair was hoping to find finance this year have now been put on ice until the present problems are resolved. Work on new machines, including the portable 128K Spectrum compatible Pandora, is continuing. When asked about development on a second 128K Spectrum machine (see *Popular Computing Weekly*, 16 May) the spokesman commented, "The research and development team are working on a range of developments – obviously I cannot comment on specific details."

Dixons BARGAIN
• SPECTRUM •
• FLAT SCREEN TV
• £30 SOFTWARE
• ZX PRINTER
£199

I believe the software and the ZX printer are nostalgia items

Release date for Cauldron from Palace

PALACE SOFTWARE has, after some delay, named a release date for *Cauldron* on the Spectrum. The Spectrum version will now be available from June 14, at £7.99.

Buyers will find a conversion of Palace's first program *The Evil Dead* on the reverse side of the tape. *The Evil Dead* was originally released only for the Commodore 64.

From Hampstead to terror at the seaside

THE PROGRAMMING duo responsible for *Hampstead*, Peter Jones and Trevor Lever are now developing *Hampstead*'s follow-up, *Terrormolinos*.

Terrormolinos will be a text and graphics adventure centring around the pitfalls of package holidays. Like *Hampstead*, the program will be published by Melbourne House.

"It will be released at the end of August," said Melbourne House's managing director Geoffrey Heath. "While *Hampstead* was very satirical, this will have a lot of saucy postcard humour." Prices and other details are yet to be finalised.

More news on p6

WIN A COPY OF ASSASSIN!

Assassin is a complex text adventure for the BBC B by Robico Software. Using machine code compression techniques, *Assassin* features dozens of locations and detailed atmospheric descriptions. Your task is to assassinate a military leader, but you have to find him and the enemy are already on your trail.

The Competition

Popular is giving away 30 copies of *Assassin* to the first 30 people to send in the correct answers to the questions below. Not only will you win the game, but you will also receive a useful notebook specially designed for adventurer's notes – useful for making maps and remembering codewords.

How To Enter

Look at the questions below. If you think you know the answers fill in the coupon and send it to *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP, by 20 June, 1985. Mark your envelope 'Assassin Competition'.

Questions

1) Who wrote *The Spy Who Came In From The Cold?*
2) Who was the Jackal trying to kill?
3) Which three actors have played the part of James Bond (excluding David Niven in *Casino Royal*)?

All Entries

Anybody who enters the competition, winner or not, who encloses a stamped address envelope will receive free membership of the Robico Software Club normally costing £1.00. This entitles you to special offers and discounts of 15% on specified software. Robico also offers a help service for people hopelessly stuck – *Assassin* isn't easy!

Assassin Competition

Name ....

Address ....

....

....

Answers

1) ....

2) ....

3) ....

....

Atari's 520 STs arrive in UK

THE first 520 ST machines will reach the shops in limited numbers this month.

"We have had the keyboards and disc drives delivered now, and are just waiting for the monitors," said Rob Harding, Atari UK's marketing manager "The monitors should be here at the end of this week. Most of the machines will than go to software houses, but some will be available on retail."

Atari hopes that 100 UK software houses will take 520 STs and write for the machine.

The first retail package, comprising keyboard, ½M disc drive and hi-res monochrome monitor, will sell for £749, down from a previously planned price of £799 (not £899 as has been reported).

Rob Harding also confirmed that, despite showing the 130 ST, Atari would still release a machine in the £400 price bracket. "But it will be more sophisticated than 128K and will have a better specification. However, that end of the market is more seasonal, so we will be announcing it in the autumn," he concluded.

Dun Darach – release date

DUN DARACH, the sequel to *Tir Na Nog*, will be released on June 6, according to Greg Follis of Gargoyle Games.

Cuchulainn's charioteer, Loeg, has been kidnapped and is incarcerated somewhere in the city of Dun Darach – Cuchulainn must barter with the other 11 characters in the game to gain the objects and information he will need to free him.

Dun Darach is for the Spectrum at £9.95. An Amstrad version is due to follow shortly.

Spectrums discounted for export market

SINCLAIR manufacturer Timex has apparently been selling Spectrums itself for export through Cheshire based Zeta Services.

"We took 65,000 Spectrums from Timex last week, and we've already sold out", said Zeta's Jim McCormack. "I have never known such unprecedented demand for a product."

He also denied reports that Zeta had been consistently undercutting Sinclair's price. "We have a sliding scale of prices – some would be the same, some slightly below Sinclair's", he said.

Timex staff working on Sinclair computers are already working a three-day week, which will continue until the factory closes for the summer holiday next month.

Timex declined to comment until a full statement had been prepared.

Amstrad light pen from DK

DK'Tronics has announced a lightpen for the Amstrad, designed by ex-Currah employee Mark Anson, and Graham Pointer.

The light pen will operate equally well with both colour and green screen monitors, and comes complete with a graphics software package.

The software uses Icon-driven pull down menus, and features a colour palette (or monochrome tones), airbrush facility, choice of brush sizes, user defined graphics, enlargement, contraction and save to disc options.

DK'Tronics' Amstrad Lightpen costs £24.95.

Details from DK'Tronics, Unit 6, Shire Hill Industrial Estate, Saffron Walden, Essex (0799 26350).



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And the sophisticated sound chip generates no fewer than 4 voices across 8 octaves in full stereo

Combine the two and you can create effects that leave today's games looking like pub video tennis of the mid-70's

For anyone with literary aspirations, the Enterprise also comes complete with an integrated word processor

Whilst the really serious user will be delighted to discover analogue RGB and TV outputs, as well as parallel, RS423 serial and network ports

Both Cobol and C will be available with CP/M running, and you can even use Lisp, Forth and Z80 assembly language on cartridge without encroaching on user RAM

The new Enterprise 64.

It hasn't just overtaken technology It's left every other home computer straggling in the distance

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commodore

Opening times: 7th & 8th June 1985 – 10am – 6pm
9th June 1985 – 10am – 5pm.
Admission: Adults £2.00, Children (under 14) £1.

Man of letters

***John Cook** talks to Robin Thompson of Tasman Software*

My guess is that until recently, you could split home computer owners into two main groups, Buffs and Game Players

Games Players are the class of kids (age has nothing to do with this definition) who moved up to computers from a Binatone Mk XVII home domestic games console or the pub 'Tank Pong' games of the late seventies.

Buffs are a different kettle of fish completely Having moved on from building things such as infra-red burglar alarms, they pounced on the ZX80 (in kit form) and have never looked back since. They all program in code, and are puzzled as to why anyone should ever want to use anything as cumbersome and slow as a high-level language For them, the computer is a unique combination of cryptic crossword and Holy Grail.

I qualify this with 'until recently' because it seems there is a growing number of people who, after going through one of the above phases, want to do something practical with their computer.

This includes a great number of first-time buyers or upgraders – a bandwaggon that has not gone unnoticed amongst the trade, hence the built in software or bundled software packages that come with so many machines at present. However, one firm has been plugging the idea of the 'usefulness' of the home computer for quite some time – and that is Tasman Software, the originator of the universally acclaimed *Tasword II* wordprocessor I asked Robin Thompson – co-director of Tasman and author of *Tasword II* – about his company's approach towards home computers

"We specialise in the user applications end of the market, including small businesses — even large companies " What? Spectrums being used for 'serious' purposes? "The Spectrum can be a very viable business machine," he maintained. "Of course, there is the difficulty of long loading time, but with microdrives this is less of a problem."

Indeed, Tasman practices what it preaches – all word processing in the company is done using Tasword on one machine or another – although an Apricot with a 10 MByte hard disc is used for accounting and mail-order work, "simply because of the memory"

That much of the business is still mail order is a mark of the humble origins of the company, and the fact it is still relatively small makes the size of its contribution to the home computer industry even more remarkable When you think that *Tasword* is probably the most owned piece of Spectrum software after the *Horizons* cassette, the scale of that contribution cannot fail to impress

Robin started programming long before Tasman became a gleam in his eye – using Fortran to produce computer models of Gas Lasers at Leeds University Later, he taught Z80 code at a college of Further Education, when he started programming on a ZX81 It was at that time that he decided to write a word processor for the ZX81 (with 16K Ram expansion) purely as a personal project. He was so pleased with the result (which he called *Tasword*), selling it seemed to be a good idea

"I just thought I'd have a go," he told me "I put an advert in the classified section of *Sinclair User*, but it was just before the Spectrum was announced, I didn't sell many, just enough to encourage."

Then came the first Tasword conversion – for the new, revolutionary Spectrum! "This was released about three to four months after the launch of the Spectrum – and most of that time was spent waiting for it to arrive!" Then came what has become the standard configuration of the program, *Tasword II* "This was for people who wanted to use the Spectrum with full column printers *Tasword II* has a 64 column display It also included instructions such as *Find* and *Replace* and block commands "

It was at this point that it was decided to form the Tasman company, together with his co-director Simon Howath, designer of their Tasman printer interface.

Since then *Tasword II* has sold steadily and well, some comparing it favourably to such legendary business titles as *Wordstar* "It has all the main features 95 percent of the users will want 95 percent of the time," says Robin Another advantage of *Tasword* over conventional business software is the fact it is completely unprotected, so that users can alter the program to suit their own needs, even though it makes it easy for software pirates to duplicate

"It's essential for the user to configure our program," he explained "It's difficult to say how much we suffer because of the lack of protection."

Tasword II now has an accompanying suite of programs, *Tasprint*, *Tascopy* and *Tasmerge* – and recently a plethora of conversions, both mechanic and linguistic! Not only can MSX, Amstrad and Einstein users revel in the joys of word processing Tasman style, but they can also do it in French, German, Spanish, Dutch, Norwegian and Swedish! Why conversions?

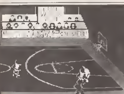
Robin shrugged. "Largely because they're there They are all Z80 based machines, so you can use the same logic; even so it is no minor task "

The linguistic conversions – mainly involving redesigning the character sets – are well worth the effort; the appeal of "word processing for the price of a home computer", it seems, is universal

So how does Robin see Tasman in relation to the games market – the one that could be said to have been the catalyst for his success He smiled with the air of a man on well trod ground "Games? Why not?"

However, Tasman has no plans yet to enter the tumultuous arena of the games market "We'll continue branching out with products that both support word processing and are free standing Word processing is the major computer application for for most people – and we're sticking with that."

Which only goes to show – for some at least – the pen is mightier than the sword and the wand . and maybe even the joystick



Heads up

Program *International Basketball* **Price** £5.99 **Micro** Commodore 64 **Supplies** Commodore Business Machines (UK) Ltd, 1 Hunters Road Weldon North Ind Estate, Corby, Northants

Time for some more sporting action with Commodore's much-awaited sequel to their best-selling game *International Soccer*. And *International Basketball* was worth waiting for. It retains all the features which made its predecessor so popular – great graphics, realistic game-play and gripping action.

You can either choose to play the computer or take on a human opponent. There are nine levels of computer play ranging from utterly pathetic to the skills as displayed by the Harlem Globetrotters. It's also possible to set the team colours and to select International, NBA or NCAA rules.

There are only three players in each team instead of the usual five. The game starts with a tip-off in the centre. You control only one player at a time usually the man closest to the ball, and he can be recognised by being a lighter colour than his team-mates. The other players in your team run around independently, waiting for you to pass or throw the ball. The player automatically bounces the ball and can pass or shoot in the direction that he is facing by simply pressing the fire button. You can even jump, block and steal just like normal basketball. It's particularly good fun jumping, turning in mid-air and then slamming the ball into the basket before landing again.

The graphics are probably even better than *International Soccer* – perhaps because everything is enlarged. I particularly like the scoreboards which were very well done (a great improvement on the Soccer). I felt the sound could have been improved, though. It might have been a good idea to add some rules in the instructions. Still, *International Basketball* is a brilliant game with excellent graphics and outstanding action.

Tom Hussey

Nuts and bolts

Program *Frank N Stein* **Micro** CPC 464 **Price** £8.95 **Supplier** Amsoft, Brentwood House, 169 Kings Road, Brentwood, Essex, CM14 4EF

Frank was one of my very favourite platform games for the Spectrum. Despite the overplayed genre the game stood out by dint of its great sense of humour. The graphics had some marvellously detailed touches, and there was enough originality about the gameplay to make it fun.

The conversion to the CPC is competent, but completely humourless. Whilst the gameplay has been faithfully reproduced, and the graphics are just as attractive the little details have been forgotten. Frank still skids on patches of ice, but the horrified expression on his face has gone. The sound effects are also not as good as the original, which is an incredible achievement when you come to think about it. The biggest loss of all is that when Frank gets electric shocks, instead of his little eyes bugging in and out there is not even the slightest change of expression.

Still, the game is very playable. It differs from the normal platform games in that Frank can only drop downwards, using ledges, stairs or fireman's poles. To get back up he has to bounce using springs. There are 50 screens, which alternate in type. In the first the objective is to collect all the body parts to make a monster. You have to avoid the mandatory nastier nasties to do so, and the screens get more complex and harder to play as the game progresses. The second screen, following the plot of various Hammer movies, is where you destroy the monster again. This is reminiscent of a *Kong* game – you start at the bottom and make your way to the top avoiding barrels, creatures etc.

Tony Kendle

Day for night

Program *Knight Lore* **Micro** Amstrad CPC 464 **Price** £9.95 **Supplier** Ultimate, The Green, Ashby de la Zouch, Leics LE6 5JU

I am not going to insult Amstrad owners' intelligence by assuming that you don't know who Ultimate are, or that you haven't been waiting weeks for the release of their games for the CPC. Similarly, everything that could have been said about *Knight Lore* has already been said many times – very original, brilliant graphics, etc, etc.

There are, however, one or two points that have to be made. First off the game is not as good as you expected, it is far better than expected. The use of the CPC's medium graphics mode, which is rare but almost always highly successful in games releases, together with the monitor produces a game with not only more colours than the Spectrum version, but also a sparkling clarity and resolution of detail that brings the 3D effect truly to life. There is no doubt that this is the closest you can get to 'playing a cartoon'.

But *Knight Lore* is not only the most important game for the Amstrad, it is one of the top five most important software releases. Conversions of programs from other machines are being produced at an alarming rate and must go a long way to ensuring future sales for Amstrad, but very few attempt to exploit the machine's particular strengths. Drab, pedestrian, unimaginative, colourful but low res games dominate. They do an injustice to the machine and look poor against the originals.

Knight Lore avoids all these traps. It looks like it was written with the CPC in mind – heaven knows what Ultimate are capable of if they really try to get the best from it.

Tony Kendle

More wallies

Program *Everybody's a Wally* **Micro** Commodore 64 **Price** £9.95 **Supplier** Mikro-Gen, 44 The Broadway, Berks

Not only does Mikro-Gen's latest release feature their famous micro-star Wally, but also most of his family. Wally's gang consists of four other weird characters: Wilma his wife, Tom the Punk, Harry the Hippie and Dick the Rasta. Each of these characters can be controlled separately (rather like *Lords of Midnight*). Thoughtful as ever, the computer provides uncontrolled game members with wills of their own. Baby Herbert (Wally and Wilma's pride and joy) also makes an appearance, but he only gets in the way (Incidentally, the infant now stars in Herbert's *Dummy Run*.)

The basic idea behind the game is for the gang to complete various tasks around the city – like mending the fountain or building a wall. For doing this, they are paid, and get the chance to do more jobs. This is where the skill factor comes in. Each of the characters are good at doing separate things, so the right person must be used in the right place. You also have to work out which objects need to be used for each task. For example, what can you do with a pile of sand or a can of baked beans? Some objects can only be reached by going through an arcade-style screen.

The locations around the town are very well done, – nice, big, colourful objects and buildings. *Everyone's a Wally* is one of those games that you either love or hate. This is mainly due to the amount of time that it takes to really get into the game and make progress. The problems are very tricky – perhaps too hard. I'm afraid I can't really say I personally liked the game. However, first-class graphics and the massive challenge of the problems will certainly appeal to some people.

Tom Hassey

Sunken sub

Program *Subsunk* **Price** £2.50 **Micro** Spectrum 48K **Supplier** Firebird Software, Wellington House, Upper St Martin's Lane, London WC2

The world of an adventure game is inevitably an enclosed one. *Subsunk* exploits this apparent limitation by trapping you, ace reporter Ed Lines (ouch!) in the claustrophobic world of a sunken submarine, with escape your prime objective.

It's obviously a large sub going by the number of locations, which are filled with things to *Examine* (a vital command in this game) and secondary puzzles to solve before you tackle the big one. Some even have small illustrations and there's nice use of sound and spot attribute effects, such as the flashing sonar. All in all the ubiquitous *Quill* has been well used.

While all this is very much in the traditional puzzle vein it's well enough conceived and written to create a credible atmosphere (if you're willing to accept that the enemy has removed the crew and scuttled the vessel while overlooking you) and there's a pleasant light humour, type in *Score* and you're irately informed, 'This isn't an arcade game'. The vocabulary claims 150 words which avoids long hours spent with the thesaurus.

An effective and fun little adventure which at this price should be an ideal introduction to the genre, while experienced adventurers looking for light relief and an absence of dragons won't be disappointed either.

John Minson

Code tools

Program *The Code Machine* **Price** £19.95 **Micro** Amstrad CPC 464/664 **Supplier** Picturesque, 6 Corkscrew Hill, West Wickham, Kent.

Picturesque is best known for its Spectrum machine code tools, these have proved popular with programmers, suitable for both beginners and experts. *The Code Machine* for the Amstrad comprises of both assembler and monitor programs supplied on cassette with a disc backup option.

Entering mnemonics into the assembler is straightforward, with each line being divided into four fields, the space bar "tabs" you across line number (0 to 9999), label (up to six characters), operation and operand. The *Auto* command provides line numbers of any chosen increment. Once you have entered the source code, it can be restructured with the commands *Renumber*, *Copy* and *Delete*, and edited by one of two methods – *Edit* brings down the line for alteration, or you can use the *Copy Cursor* feature of the Amstrad.

The monitor provides many useful commands, including a full disassembler, most notable is the *Trace* option, which single steps through routines with a comprehensive "front panel" display of register contents. What's more, you can enable either Rom for disassembly, and even change the alternative register set.

In a straight comparison with the Amsoft *Devpac* program, *The Code Machine* is easier to use and has extra features. I can find only a few points on which *Devpac* scores: remark statements can be added to the end of a line, rather than occupying their own, and its monitor is capable of disassembling code into a text file. This is a first-class product.

Jeff Naylor

Readers' Survey

***Popular Computing Weekly* has never attempted a reader survey before, but after more than three years of the magazine, we felt it was high time we asked you what you feel *Popular* should be like**

To help *Popular* become more the magazine you want we've set out the questionnaire below. We've tried to make it as short as possible, so please fill it in and send it off to *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP

Micro(s) owned (if more than one please list in order of purchase)

How often do you buy *Popular Computing Weekly*?
Every week ☐ Most weeks ☐
Once a month ☐ Very occasionally ☐

Do you subscribe to *Popular*?
Yes ☐ No ☐

Which other magazines do you regularly buy?
Your Computer ☐ *Personal Computer World* ☐ *Computer and Video Games* ☐ *Home Computing Weekly* ☐ *Commodore User* ☐ *Commodore Horizons* ☐ *Sinclair User* ☐ *Amstrad User* ☐ *Acorn User* ☐ *The Micro User* ☐ *Crash* ☐ *Zzap 64* ☐
Others ______

List the three most important features you buy *Popular Computing Weekly* for (ie, New Releases, Letters, etc)

1) ______

2) ______

3) ______

How much money have you spent in the last three months on:

Software? £ Hardware? £

Which peripherals do you own?
Printer ☐ Joystick ☐ Disc drive ☐ Microdrive ☐ Modem ☐ Speech synth ☐ Monitor ☐ Printer/plotter ☐

Others (please specify) ______

Which additional peripherals are you thinking of buying in the next 12 months? (Please specify).

What do you mainly use your micro for? (tick more than one box if appropriate)
Games ☐ Wordprocessing ☐ Learning programming ☐ Home business ☐ Communications/networks ☐ Music ☐ Graphics ☐
Others (please specify) ______

Are you VERY interested, FAIRLY interested or NOT interested in each of the following:

	VERY	FAIRLY	NOT
Arcade games	☐	☐	☐
Adventure games	☐	☐	☐
Wordprocessing	☐	☐	☐
Home business	☐	☐	☐
Graphics	☐	☐	☐
Computer Music	☐	☐	☐
Networking	☐	☐	☐
Basic programming	☐	☐	☐
Machine-code programming	☐	☐	☐
New machines	☐	☐	☐
New peripherals	☐	☐	☐
New software	☐	☐	☐

Do you type in the Star Game listing from *Popular* (when it is for your micro)?
Often ☐ Sometimes ☐ Never ☐

Do you type in (or use elsewhere part of) the machine-page listing for your micro?
Each week ☐ Often ☐ Sometimes ☐ Never ☐

Do you key in programs from the *Open Forum* section of the magazine?
Often ☐ Sometimes ☐ Never ☐

How do you feel about the balance of the features. Do you think there should be more or less space allocated to each feature, or is the coverage about right?

	MORE	ABOUT RIGHT	LESS
News	☐	☐	☐
Letters	☐	☐	☐
Competitions	☐	☐	☐
New software reviews	☐	☐	☐
New hardware reviews	☐	☐	☐
Peripheral surveys	☐	☐	☐
Games software reviews	☐	☐	☐
Language software reviews	☐	☐	☐
Utility software reviews	☐	☐	☐
Book reviews	☐	☐	☐
Interviews	☐	☐	☐
Games listings	☐	☐	☐
Programming tips listings	☐	☐	☐
Home business listings	☐	☐	☐
Utility listings	☐	☐	☐
Machine-code listings	☐	☐	☐
Computer music	☐	☐	☐
Modems and networking	☐	☐	☐
Adventure column	☐	☐	☐
Arcade column	☐	☐	☐
Peek & Poke	☐	☐	☐
New Releases	☐	☐	☐
Puzzles	☐	☐	☐
Ziggurat	☐	☐	☐

Do you follow the Top Ten charts?
Yes ☐ No ☐

Do you plan to change your micro in the next year?
Yes ☐ No ☐
If so, what to? ______

What additional feature would you most like to see in *Popular*?

Your age ______

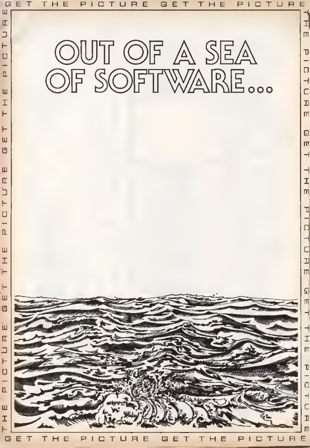
Your occupation ______

Name ______

Address ______



BOSS
Start a business and learn about balance sheets, profit, cash flow, bank loans
ENTREPRENEUR
Take the guesswork out of prediction and plan ahead.
FORECASTER
Need help with figures? Work out VAT, PAYE, margins, interest
NUMBERS AT WORK
Discover the constellations and learn the secrets of your universe
STARWATCHER
Schedule work, meet deadlines and save time and money
PROJECT PLANNER
Work out your best move to make the most of your opportunities
DECISION MAKER
Get soft with your micro...
and make the best of it with Brainpower
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Are you really making the best of your micro – are you still using too much of your own brainpower?
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OUT OF A SEA OF SOFTWARE...
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Hardware Review

Extra cost

Hardware *Enterprise 128* **Price** £249 95 **Manufacturer** Enterprise Computers Ltd 31-37 Hoxton Street, London N1 6NJ.

The Enterprise 64 finally appeared just before last Christmas priced at £250 (reviewed Vol 4 No 1), and was received cautiously by all. In terms of specification the Enterprise is difficult to fault offering very good screen display capabilities, good sound and an advanced though very slow Basic. However, despite the specifications of the machine the price was too high to cause much of a stir Now comes the Enterprise 128 for £250, along with a big price cut for the Enterprise 64.

Inside, the 128K version of the Enterprise turns out to be exactly the same as the 64K model, but with the addition of a small circuit board holding a second bank of Ram This circuit board is connected to expansion points 1 and 2 on the main circuit board, next to the hardware expansion port on the right of the computer, and thus behaves just as an external Ram expansion. Eight 64K by 1-bit Ram chips are used, as on the main circuit board, although the Enterprise hardware addresses memory in 16K segments The operating system will only allow four of these segments to be active at any one time when using Basic and only one program may use each segment. One effect of this is that the maximum space available to a program is limited to around 44K for the first program and 32K for subsequent programs. The bottom two segments must always be present as these contain the display-screen Ram, system variables, the editor workspace, and an area for user-defined display channels.

Unfortunately the 128K version of the Enterprise, when compared with the much cheaper 64K model offers very little advantage to the user in its current state as the operating system, EXOS 2 1, although designed to make use of up to four Megabytes of memory, does not give enhanced facilities to go with extra memory Thus you do not get improved graphics, the Enterprise user-defined video-displays are no bigger, you cannot store paged display-screens from Basic, and the space available for a single Basic program plus data is no greater What you do get is the ability to store up to eight Basic programs in memory at one time, which can be run independently or can be chained, although you run up against limitations in the memory segmentation if you do try and use all eight and the programs are large It was whilst investigating the multi-program capacity of the 128K machine that I encountered the only bug I could find in an otherwise very clean machine There is a function, *Free*, which declares the space available to each program When the number of programs in memory is large, *Free* displays a rather alarming zero In fact you still have up to 16K available

Perhaps the best thing about the launch of the Enterprise 128 is the price reduction on the existing 64K model For £180 the Enterprise 64 offers better sound, display, and programming capabilities than almost any other computer in a similar price range Both Enterprise models suffer from lack of software at present and until such becomes available, it is difficult to justify the cost of the 128K model.

John Cochrane

ZX Tickets

200 free tickets

for the 16th ZX Microfair



Popular Computing Weekly is giving away 200 free tickets for the 16th ZX Microfair – to be held at New Horticultural Hall on Saturday July 22 – to the first 200 people who submit either programs for the ZX Spectrum or QL or letters for possible publication in the magazine **before June 17.**

All you have to do for your free ticket is to enclose a stamped addressed envelope with your program or letter submission

Remember – the tickets go to the first 200 people to send in a program and the offer applies only to programs received by us **no later than midday on June 17.**

Invasion

The fate of the Earth lies in your hands – can you thwart the Zygontian Invasion? On Amstrad by ***D L Lau***

There are three phases to this game. First you must shoot down the Aliens as they swoop towards your space craft. After this you must face the Command ship.

Finally, in Phase Three you dock with your Mothership – and then are transported to another part of the planet to blast the final wave.

Good luck!

Program Notes

Line No			
10-180	Initialisation	680-810	Subroutine for collision
190-210	Print Screen	820-860	Print and check base s bullet
220-410	Main Loop	870-890	Check shot alien
420-480	Subroutine for moving alien right	900-910	Crash into alien
		960-960	Check and print X sign
500-570	Subroutine for moving alien left	970-1420	Instructions
580-620	Subroutine for moving base left	1440-1670	Routine for Phase 2
630-670	Subroutine for moving base right	1680-2080	Routine for Phase 3

```
10 H$="AMSTRAD"
15 ENT 9,50,2,2:ENV 9,50,5,1
16 ENT 8,100,5,1,50,2,2
20 DEFINT a-z
30 DIM x(8),y(8),p(8):SYMBOL AFTER 33
40 INK 0,0:INK 2,20:INK 1,24:BORDER 0:INK 3,6:
INK 4,18:INK 5,26:INK 6,16,1:INK 7,6,2:PAPER 0
:GOTO 1170
50 l1=3:sc=0:k1=0
60 SYMBOL 38,9,7,26,68,118,195,129,2:SYMBOL 40
,144,224,180,232,110,195,129,64
70 SYMBOL 123,197,99,53,31,30,7,3,12:SYMBOL 12
5,163,198,172,248,120,224,192,48
80 SYMBOL 91,24,24,24,28,28,129,187,238:SYMBOL
 93,235,234,165,189,24,60,102,235
90 SYMBOL 94,0,0,0,0,20,62,20,127
100 SYMBOL 37,0,6,63,249,249,127,7,1:SYMBOL 35
,60,102,235,231,219,231,255,129:SYMBOL 124,0,9
6,232,159,159,254,224,128
110 SYMBOL 239,0,0,0,24,36,24:SYMBOL 157,0,0,0
,6,6:SYMBOL 128,0,0,0,96,96
120 INK 0,0:INK 2,20:INK 1,24:BORDER 0:INK 3,6
:INK 4,18:INK 5,26:INK 6,16,1,INK 7,6,2:PAPER
0
130 pp=0
140 x(1)=10:y(1)=7:x(2)=7:y(2)=9:x(3)=13:y(3)=
9:x(4)=10:y(4)=11
150 x(5)=6:x(8)=10:y(8)=14:y(5)=13:x(6)=14:y(6
)=13:x(7)=2:y(7)=14
160 v=0:vv=0
170 s=11:p(1)=1:p(2)=2:p(3)=1:p(4)=2:p(5)=1:p(
6)=2:p(7)=1:p(8)=2
180 MODE 0:d1=0:d=0
190 FOR f=1 TO 8:PEN 1:LOCATE x(f),y(f):PRINT"
&(":NEXT
200 LOCATE s,23:PEN 2:PRINT"{":LOCATE s,24 PRI
NT"}"
210 PEN 3:LOCATE 1,1:PRINT"HI":hi:LOCATE 10,1:
PRINT"SC":sc:LOCATE 10,1:PRINT STRING$(l1,"{")
220 IF d<4 AND d1=0 AND INT(RND*15)=1 THEN SOU
ND 1,50,30,5,9,9:d1=INT(RND*20)+1:d2=3
230 IF d1<>0 THEN GOSUB 920
240 FOR f=1 TO 4:IF x(f)=0 THEN 270
250 ON p(f) GOSUB 420,500
270 NEXT
280 IF INKEY(34)=0 AND s>1 THEN GOSUB 580
290 IF INKEY(27)=0 AND s<20 THEN GOSUB 630
300 IF v>0 THEN GOSUB 830
310 IF INKEY(53)=0 AND v=0 THEN v=s:vv=22:GOSU
B 820
320 FOR f=5 TO 8:IF x(f)=0 THEN 340
330 ON p(f) GOSUB 420,500
340 NEXT:f=1:IF k1=0 THEN k1=1 ELSE k1=0
350 IF v>0 THEN GOSUB 830
360 IF INKEY(34)=0 AND s>1 THEN GOSUB 580
370 IF INKEY(27)=0 AND s<20 THEN GOSUB 630
380 IF v>0 THEN GOSUB 830
390 IF INKEY(53)=0 AND v=0 THEN v=s:vv=22:GOSU
B 820
410 GOTO 220
420 IF y(f)<22 THEN 440
430 IF x(f)+1=s OR x(f)+2=s THEN 160
440 IF (x(f)=v AND y(f)=vv-1)OR (x(f)+1=v AND
vv-1=y(f)) THEN h=f:GOSUB 900:RETURN
450 IF INT(RND*4)=1 THEN p(f)=2:GOTO 500
460 x(f)=x(f)+1:IF x(f)=20 THEN p(f)=2:x(f)=19
:GOTO 500
470 y(f)=y(f)+1:IF y(f)=24 THEN LOCATE x(f)-1,
y(f)-1:PRINT"  ":x(f)=INT(RND*18)+2:y(f)=3:LOC
ATE x(f),y(f):PEN 1:IF k1=0 THEN PRINT"&("ELSE
 PRINT"{}":RETURN
480 LOCATE x(f)-1,y(f)-1:PRINT"  ":PEN 1:LOCAT
E x(f),y(f):IF k1=0 THEN PRINT"&("ELSE PRINT"{
}"
490 RETURN
500 IF y(f)<22 THEN 520
510 IF x(f)=s OR x(f)-1=s THEN 760
520 IF (x(f)=v AND y(f)=vv-1)OR(x(f)+1=v AND y
(f)=vv-1) THEN h=f:GOSUB 900:RETURN
530 IF INT(RND*4)=1 THEN p(f)=1:GOTO 420
540 x(f)=x(f)-1:IF x(f)=0 THEN p(f)=1:x(f)=1:G
OTO 420
550 y(f)=y(f)+1:IF y(f)=24 THEN LOCATE x(f)+1,
y(f)-1,PRINT"  ":x(f)=INT(RND*18)+2:y(f)=3:LOC
ATE x(f),y(f):PEN 1:IF k1=0 THEN PRINT"&("ELSE
 PRINT"{}":RETURN
560 LOCATE x(f)+1,y(f)-1:PRINT"  ":PEN 1:LOCAT
E x(f),y(f):IF k1=0 THEN PRINT"&("ELSE PRINT"{
}"
570 RETURN
580 te=TEST((s-1)*32-16,10):IF te=14 THEN 790
590 IF te=1 THEN 700
600 s=s-1
610 LOCATE s+1,23:PRINT" ":LOCATE s+1,24:PRINT
" "
620 PEN 2:LOCATE s,23:PRINT"{":LOCATE s,24:PRI
NT"}":RETURN
630 te=TEST(s*32+16,40):IF te=1 THEN 800
640 IF te=14 THEN 700
650 s=s+1
660 LOCATE s-1,23:PRINT" ":LOCATE s-1,24:PRINT
" "
670 GOTO 620
680 x(f)=x(f)+1:y(f)=y(f)+1:LOCATE x(f)-1,y(f)
-1:PRINT"  "
690 PRINT CHR$(22)+CHR$(1):LOCATE x(f),y(f):PE
N 1:IF k1=0 THEN PRINT"&("ELSE PRINT"{}"
700 PEN 6:LOCATE s,23:PRINT"{":LOCATE s,24:PEN
 7:PRINT"}":FOR f=1 TO 1550:NEXT
710 ENT 1,10,-5,2:ENT 2,50,1,1:FOR r=1 TO 100
STEP 10:SOUND 1,(100-r)*10,23,INT((100-r)/15),
0,1:SOUND 2,(100-r)*5,15,INT((100-r)/15),0,1:N
EXT
720 FOR f=0 TO 15:SOUND 2,0,20,INT((15-f)/2),0
,0,1:NEXT
730 FOR l=1 TO 20:INK 0,26:FOR f=1 TO 50:NEXT
:INK 0,0:FOR g=1 TO 35:NEXT:NEXT
740 PRINT CHR$(22)+CHR$(0):l1=l1-1:IF l1=0 THE
N 970
750 LOCATE 20-l1,1:PEN 5:PRINT" ":GOTO 180
760 x(f)=x(f)-1:y(f)=y(f)+1:LOCATE x(f)+1,y(f)
-1:PRINT"  "
770 GOTO 690
780 s=s-1:LOCATE s+1,23:PRINT" ":LOCATE s+1,24
:PRINT" "
790 PRINT CHR$(22)+CHR$(1):PEN 2:LOCATE s,23:P
RINT"{":LOCATE s,24:PRINT"}":GOTO 700
800 s=s+1:LOCATE s-1,23:PRINT" ":LOCATE s-1,24
:PRINT" "
810 GOTO 790
820 SOUND 1,50,23,4,0,0:PEN 4:LOCATE v,vv:PRIN
T"^^"
830 te=TEST(v*32-16,(26-vv)*16+8):IF te=1 THEN
 890
840 IF te=14 THEN ENT 1,100,5,2:SOUND 1,384,20
,5,0,1:ENT 2,35,10,5:SOUND 2,25,20,5,0,1:LOCAT
E v,vv:PRINT" ":LOCATE v,vv-1:PRINT" ":v=0:d1=
0:RETURN
850 vv=vv-1:IF vv=2 THEN LOCATE v,3:PRINT" ":v
=0:RETURN
860 LOCATE v,vv:PEN 4:PRINT"^^":LOCATE v,vv+1:P
RINT" ":RETURN
870 FOR f=1 TO 8:IF x(f)=0 THEN 890
880 IF (x(f)=v AND y(f)=vv-1) OR (x(f)+1=v AND
 y(f)=vv-1) THEN 900
890 NEXT :f=1
900 LOCATE x(f),y(f):PEN 15:PRINT"%Z":LOCATE v
,vv:PRINT" ":sc=sc+2:d=d+1:IF d=8 THEN LOCATE
X(f),Y(f):PRINT"  ":LOCATE v,vv:PRINT" ":v=0:G
OTO 1440
910 ENT 2,50,2,2:ENV 1,50,1,1:SOUND 1,150,40,4
,1,1:FOR g=1 TO 30:NEXT:v=0:PEN 5:LOCATE 13,1:
PRINT sc:LOCATE x(f),y(f):PRINT"  ":x(f)=0:RET
URN
920 IF d1=v AND d2=vv-1 THEN ENT 1,100,5,2:SOU
ND 1,284,20,5,0,1:ENT 2,35,10,5:SOUND 2,25,20,
```

```
5,0,1:LOCATE v,vv:PRINT" ":LOCATE v,vv-1:PRINT " ":v=0:d1=0:RETURN
930 d2=d2+1:IF d2=24 THEN d1=0:RETURN
940 IF d1=s AND d2=23 THEN d1=0:GOTO 700
950 LOCATE d1,d2-1:PRINT" ":LOCATE d1,d2:PEN 14:PRINT CHR$(203):RETURN
960 GOTO 140
970 CLS:LOCATE 2,3:PEN 4:PRINT"ZYGONLIAN INVASION"
980 IF SC>HI THEN PEN 10:LOCATE 5,6:PRINT"WELL DONE"":LOCATE 1,9:PEN 5:PRINT"YOU HAVE BEATEN THE HI SCORE OF ";HR
990 IF SC>HI THEN 1030
1000 PEN 5:LOCATE 1,7:PRINT"HI SCORE IS";HI:PRINT"PRINT"BY ";H$
1010 PEN 3:PRINT:PRINT:PRINT" YOUR SCORE IS";SC
1020 GOTO 1140
1030 HI=SC:LOCATE 1,13:PEN 13:PRINT"THE NEW HI SCORE IS          ";HI
1040 PEN 1:LOCATE 7,18:PRINT STRING$(9,CHR$(208))
1050 PRINT:PRINT:PEN 3:PRINT"* INPUT YOUR NAME *"
1060 FOR F=1 TO 60:M$=INKEY$:NEXT:
1070 M$=INKEY$:N$="":M$="":FOR F=7 TO 15
1080 M$=INKEY$:IF M$=""THEN 1080
1090 SOUND 1,f*50,2,5
1100 LOCATE F,17:PEN 1:PRINT UPPER$(M$)
1110 IF ASC(M$)=13 THEN 1140
1120 N$=N$+M$:PR=""
1130 NEXT
1140 PRINT:PRINT:PRINT:PEN 10:PRINT"*PRESS 'C' TO CONT*"
1150 IF INKEY$<>"c" THEN 1150
1160 s$=UPPER$(n$)
1170 f=5:INK 1,10,10:MODE 1:LOCATE 7,10:PEN 1:PRINT"*** THE ALIENS ARE COMING ***":ENT 3,30,2,2:ENT 1,30,2,2:ENT 2,30,2,2:l=1:FOR f=1 TO 50:SOUND 1,f,25,1,0,l:IF l=3 THEN l=5 ELSE l=3
1180 IF f>25 AND f<50 AND q=0 THEN SOUND 2,f-25,25,l,0,l:IF l=2 THEN l=4 ELSE l=2
1190 NEXT:IF q=0 THEN l=f-25:q=1:GOTO 1170
1200 ENV 1,30,5,2:FOR f=1 TO 30:SOUND 1,50-f,25,1,1:NEXT:ENT 1,30,1,1
1210 FOR f=1 TO 30:SOUND 1,(30-f)*2,23,INT((30-f)/5),0,1:SOUND 2,(30-f)*2,15,INT((30-f)/5),0,1:NEXT
1220 ENT 1,30,2,2:ENT 2,30,1,1:FOR F=1 TO 50 STEP 3:SOUND 1,F*5,30,INT((50-F)/5),0,1:SOUND 2,F*2,30,INT((50-F)/5),0,1:NEXT
1230 MODE 2:PAPER 3:CLS:FOR f=40 TO 1 STEP -1:WINDOW f,81-f,1,25:PAPER 0:CLS:FOR g=1 TO 100:NEXT:NEXT:INK 1,24
1240 INK 4,1:MOVE 0:PEN 3:LOCATE 2,2:PRINT STRING$(10,CHR$(143))
1250 PEN 7:PRINT CHR$(22)+CHR$(1):LOCATE 2,2:PRINT"ZYGONLIAN INVASION":PRINT CHR$(22)+CHR$(0)
1260 PEN 1:TAG:FOR f=640 TO 0 STEP -25:MOVE f,320:PRINT"Your planet is under ";:NEXT
1270 FOR f=640 TO 15 STEP -25:MOVE f,280:PRINT "attack by a troop of ";:NEXT
1280 FOR f=640 TO 90 STEP -25:MOVE f,240:PEN 4:PRINT"ZYGONLIAN invaders ";:NEXT
1290 FOR f=640 TO 5 STEP -25:MOVE f,200:PRINT"You must destroy as many as ";:NEXT
1300 FOR f=640 TO 60 STEP -20:MOVE f,160:PRINT "many of these as ";:NEXT
1310 FOR f=640 TO 170 STEP -20:MOVE f,120:PRINT"possible ";:NEXT
1320 TAGOFF:PEN 2:LOCATE 1,22:PRINT"  PRESS 'C' TO CONT "
1330 IF INKEY$<>"c"THEN 1330
1340 FOR f=1 TO 22:LOCATE 1,25:PRINT CHR$(10):NEXT
1350 PEN 2:LOCATE 1,3:PRINT"AFTER YOU DESTROYED ALL THE ALIEN HAWKS"
1360 PEN 4:PRINT:PRINT:PRINT"  YOU HAVE TO SHOOT DOWN A COMMAND SHIP"
1370 PEN 5:PRINT:PRINT:PRINT"   THEN YOU HAVE TO  JOIN YOUR MOTHER   SHIP IN ORDER TO BE  TRANSPORTED TO  ANOTHER PART OF YOUR PLANET"
1380 PEN 3:PRINT:PRINT"PRESS 'P' FOR RIGHT  AND 'O' FOR LEFT"
1390 PEN 1:PRINT:PRINT"  PRESS 'F' TO FIRE "
1400 PEN 10:PRINT:PRINT:PRINT"  PRESS 'C' TO PLAY "
1410 IF INKEY$<>"c"THEN 1410
1420 GOTO 50
1440 FOR g=3 TO 5
1450 FOR F=1 TO 17
1460 ENT 1,30,2,3:SOUND 1,2,10,5,0,1,1:ENT 2,10,5,1:SOUND 2,99,30 5,0,1,1
1470 PEN 3:LOCATE F,g:PRINT" 20'":PRINT CHR$(22)+CHR$(1):PEN 5:LOCATE F+2,g:PRINT CHR$(239):PEN 4:LOCATE F+1,g:PRINT CHR$(157):LOCATE F+3,g:PRINT CHR$(120)
1480 PRINT CHR$(22)+CHR$(0)
1490 IF INKEY(34)=0 THEN GOSUB 280
1500 IF INKEY(27)=0 THEN GOSUB 430
1510 IF v>0 THEN GOSUB 1590
1520 IF INKEY(53)=0 AND v=0 THEN v=s:vv=22:GOSUB 1580
1530 IF f+2=s AND q=0 THEN ENT 1,10,-30,2:SOUND 1,200,10,5,0,1:ENT 2,35,-80,1:SOUND 2,22,10,3,0,1 ENT 1,100,2,2:SOUND 1,0,20,5,0,1,1:q=1:q1=s:q2=g+2:GOSUB 1680
1540 IF q=1 THEN GOSUB 1650
1550 IF d1=0 AND INT(RND*6)=1 THEN SOUND 1,50,30,5,9,9:d1=f+2:d2=g+1:GOSUB 970
1560 IF d1>0 THEN GOSUB 970
1570 NEXT:LOCATE 17,g:PRINT"    ":NEXT:LOCATE 1,6:PRINT"    ":GOTO 1440
1580 SOUND 1,50,23,4,0,5:PEN 4:LOCATE v,vv:PRINT"^^"
1590 t=TEST(v*32-16,(26-vv)*16+8):IF t=3 THEN LOCATE f,g:PEN 6:PRINT" 20'":ENT 1,30,2,2:FOR f=1 TO 10:SOUND 1,f*2,50,INT((100-f)/5),9,1,1:NEXT
1600 IF t=3 THEN PEN 6:1NP 7,7,9:n=INT(RND*10)0:sc=sc+n:LOCATE f,g:PRINT" AR!":PEN 4:LOCATE f+1,g:PRINT n:PEN 5:LOCATE 17,1:PRINT sc:FOR g=1 TO 2000:NEXT:GOTO 1690
1610 IF t=14 THEN 840
1620 vv=vv-1:IF vv=2 THEN LOCATE v,5:PRINT" ":v=0:RETURN
1630 LOCATE v,vv:PEN 4:PRINT"^^":LOCATE v,vv+1:PRINT" ":RETURN
1640 LOCATE q1,q2:PEN 5:PRINT CHR$(252)
1650 IF q1=s AND q2=22 THEN 710
1660 q2=q2+1:IF q2=23 THEN LOCATE q1,22:PRINT" ":q=0:RETURN
1670 LOCATE q1,q2:PEN 5:PRINT CHR$(252):LOCATE q1,q2-1:PRINT" ":RETURN
1680 CLS:d1=0:PRINT:PRINT:PEN 4:PRINT" YOU HAVE DESTROYED THE HAWKS' COMMANDERSHIP AND NOW YOU   HAVE TO DOCK WITH   YOUR MOTHER SHIP"
1690 PRINT:PRINT:PEN 1:PRINT" YOU MUST DOCK IN   ORDER TO GET FUEL. BECAREFUL THOUGH YOU MUST LAND ON THE   CORRECT POSITION OR YOU'LL CRASH!"
1700 PRINT:PRINT:PEN 3:PRINT" (WARNING) YOU MUST  LAND ON THE GREEN    LANDING PAD"
1710 PRINT:PRINT:PEN 2:PRINT" PRESS 'C' TO CONT "
1720 IF INKEY$<>"c"THEN 1720
1730 CLS:PRINT:PRINT:PRINT"  USE 'P' FOR RIGHT ":PRINT:PRINT"  AND 'O' FOR LEFT"
1740 PRINT:PRINT:PEN 6:PRINT" *** GOOD LUCK ***":SYMBOL 33,0,0,4,4,4,0,6,15:SYMBOL 35,126,126,36,36,102,126,231,255
1750 FOR y=1 TO 1000:NEXT
1760 SYMBOL 27,0,0,32,32,32,32,96,240:SYMBOL 30,31,59,193,1,3,3,6,31:SYMBOL 64,255 195,153,189,153,195,189,255:SYMBOL 163,240,220,135,128,192,192,64,240
1770 SYMBOL 138,0,60,102,66,102,60,24:SYMBOL 157,0,0,24,24,24,0,24:CLS
1780 INK 0,0:SYMBOL 222,126,126,0,0,0,0,0,255 SYMBOL 223,0,0,4,4,4,4,4:SYMBOL 224,0,0,32,32,32,32,32
1790 INK 0,0:SYMBOL 222,126,126,0,0,0,0,0,255:SYMBOL 223,0,0,4,4,4,4,4:SYMBOL 224,0,0,32,32,32,32,32
1800 LOCATE 10,24:PEN 2:PRINT"'4X":LOCATE 10,25:PRINT"&NN":PRINT CHR$(22)+CHR$(1):LOCATE 11,23:PEN 3:PRINT CHR$(157):LOCATE 11,24:PEN 0:PRINT CHR$(130)
1810 LOCATE 11,23:PEN 4:PRINT CHR$(222):LOCATE 10,25:PEN 1:PRINT CHR$(223):LOCATE 12,23:PRINT CHR$(224):LOCATE 11,24:PRINT CHR$(210):PRINT CHR$(22)+CHR$(0)
1820 LOCATE 1,1:PRINT CHR$(11)
1830 t=0:g=0:x=310:y=390:TAG:MOVE x,y:PEN 2:PRINT CHR$(91);
1840 IF INKEY(34)=0 THEN g=0
1850 t=t+1:IF t=15 THEN ENT 1,25,2,1:SOUND 1,50,15,5,0,1,15:t=0
1860 IF INKEY(27)=0 THEN g=1
1870 IF g=0 THEN 1900
1880 IF g=1 THEN 1960
1890 GOTO 1840
1900 y=y-1:x=x-1:MOVE x+1,y+1:PRINT" ";:MOVE x,y:PRINT CHR$(91);
1910 IF y=46 AND x>316 AND x<330 THEN 2070
1920 IF y<45 THEN TAGOFF:LOCATE 10,24:INK 0,18,3:PEN 0:PRINT"'4Z":LOCATE 10,25:PRINT"&N0"
1930 IF y<45 THEN GOSUB 2060:FOR g=1 TO 20:INK 0,26:FOR f=1 TO 50:NEXT:INK 0,0:FOR f=1 TO 50:NEXT:NEXT:li=li-1:IF li=0 THEN 970
1940 IF y<45 THEN 60
1950 GOTO 1840
1960 y=y-1:x=x+1:MOVE x-1,y+1:PRINT" ";:MOVE x,y:PRINT CHR$(91);
1970 IF y=46 AND x>316 AND x<330 THEN 1910
1980 IF y<45 THEN 1930
1990 GOTO 1840
2000 LOCATE 10,24:PEN 2:PRINT"'4X":LOCATE 10,25:PRINT"&NN":PRINT CHR$(22)+CHR$(1):LOCATE 11,23:PEN 3:PRINT CHR$(157):LOCATE 11,24:PEN 0:PRINT CHR$(130)
2010 LOCATE 11,23:PEN 4:PRINT CHR$(222):LOCATE 10,23:PEN 1:PRINT CHR$(223):LOCATE 12,23:PRINT CHR$(224):LOCATE 11,24:PRINT CHR$(210):PRINT CHR$(22)+CHR$(0)
2020 FOR f=2025 TO 2122 STEP 20:SOUND 1,f,30,6:SOUND 1,1-50,10,6:SOUND 1,1,60,4:NEXT:FOR f=1 TO 20:LOCATE 1,1:PRINT CHR$(11):FOR g=1 TO 20:NEXT:LOCATE 1,25:PRINT CHR$(10):NEXT:FOR f=1 TO 23:LOCATE 1,25:PRINT CHR$(10):NEXT
2030 g=INT(RND*200)+80:PEN 2:LOCATE 7,3:PRINT"WELL DONE":PEN 1:PRINT:PRINT:PRINT"    * BONUS =";g;"*":LOCATE 1,8:PEN 3:PRINT"    NOW YOU ARE IN ANOTHER PART OF YOUR PLANET"
2040 FOR f=1 TO 5000:NEXT:sc=sc+g
2050 GOTO 60
2060 ENT 1,30,2,2:ENT 2,30,1,1:FOR f=1 TO 100 STEP 10:SOUND 1,(100-f)*4,25,INT((100-f)/15),0,1:SOUND 2,(100-f)*2,15,INT((100-f)/15),0,1:NEXT:RETURN
2070 FOR ff=1 TO 5:ENT 1,30,5,2,50,2,5,25,-1,2:SOUND 1,ff*25,20,4,0,1:NEXT
2075 FOR ff=1 TO 5:ENT 1,30 5,2,50,2,5,25,-1,2:SOUND 1,ff*25,20,4,0,1:NEXT
2080 TAGOFF:FOR l=1 TO 25:INK 9,f:PEN 8:LOCATE 11,23:PRINT CHR$(9):LOCATE 10,24:PRINT"'9L":LOCATE 10,25:PRINT"HHH":FOR ff=1 TO 50:(26-f)*5:NEXT:NEXT:GOTO 2000
```


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Going for a song

*Sing-along-a **John De Rivaz** with this music-making program for Spectrum 48K*

Music notation is not particularly easy to master, and indeed evolved for instruments very different to the Spectrum's *Beep* However, all the *Beep* need be told is the frequency of the note and its duration.

In this system, there are four commands *U*, *D*, *L*, and *Z* Using just *U* and *D* it is possible to write a tune, but all the notes are of equal length For the purposes of this program length 1 is 1/16 of a second, therefore if a note is defined by *L16*, it sounds for one second The start is set up as *Beep 1,0*, ie, *L16*, and middle C

There is also a facility in the program to have three sub-strings of notes, and in order to be able to start these at defined places, we have an additional command *Z*. This sets the note level to 0 and plays a note of the current length. *ZLO*, therefore, sets the note to zero and doesn't play it

On running the program, you are in the edit mode Enter in the tune you want, eg *UOD1U2L8D1D1* The start length is 1 second Therefore *UO* plays note 0 (middle C) for 1 second. *D1* plays note -1 for 1 second. *U2L8* plays note 1 for 16/8 = 1/2 second, and the length is set to 1/2 second until changed. *D1* plays note 0 and the final D1 note -1

Press *Enter* and the screen will clear and a notice *"Compiling ."* will appear. Then a list of the notes you have chosen followed by the string you created will be printed, following which the dirge you have composed will be played You will be offered a menu giving the choice of *Editor*, *Save*, *Lprint*, *End*, *Re-start* The dirge goes on playing until one of these has been selected

Press the ★ key for Editor, *E*, and you will be back in the editor. You may feel that you would like the tune played quicker Therefore, press *Shift* and 8 and see the string in the middle of the screen move to the right. The right half of the string is displaced down a character Move it until you get the following

UO
D1U2L8D1D1

Then press *L* followed by *8* and you will get them inserted after *UO* and before the rest of the string

Now, just for fun, press *Enter* All you will get is one note sounded for half a second This shows that only the string to the left of the step is compiled into the array Press *E* again to get back to the editor

Using *Shift/5*, move the string along until you get

UOL8D1U2L8
D1D1

Use *Shift O* to delete the 8, then press *4* Then move the string right along so that all the characters are to the left, and you should have *UOL8D1U2L4D1D1*. Press return and hear the tune played at twice the speed

Press *E* to get back to the editor, and then press *I* A further menu gives you the option of filling one of three strings with the characters to the left of the step, or alternatively of adding to the leftmost characters one of three strings previously stored In this instance, press *1* to store the characters already composed

This puts you back in the main editor Add *ZLOU12*. This re-sets the note and then raises it by 12, without sounding anything Then press *I*, then *A* You are back in the main editor, and the *ZLOU12* appears to have gone Move the string back using *Shift/8*, though and you will find the *ZLOU12* about half way along, and the original set of notes is repeated following it Note that if the first note, UO in this case, isn't followed by an L command, it won't sound, as the length had previously been zeroed It is good practice always to define the length of the first note

Use *Shift/5* to move the string to the left, and press return. You will get your tune played twice, the second time up 12

Now use the editor to change the *U12* to *D12* and see how you like the result. Then add *ZLOU24* to the end of the string, and press *I* followed by *A* again. Repeat twice more with the addition of *ZLOD12* and *ZLOD24* at the end followed by *I*, *A* each time.

You have now used all the functions of the editor Arrays created by this program can be entered as *Data* statements in your own program for *Beep* tunes I hope that readers with more artistic talent than myself will be able to create some good tunes with this program

You are advised not to use a *ZLO* within a substring if you wish to play it at different keys. Instead, calculate the total displacement, say *D1*, and correct it with an *U1LO* The *Z* command is not really necessary, but it is included to make the program easier and therefore more fun to use

The *Poke* in Line 9000 prevents the *"Start tape "* message appearing and the line saves the whole program three times without the need to press a key each time Enter *Goto 9000*, start tape, and then press *Enter*

To save typing, I will supply any reader the program on a cassette for £2 Send that remittance to RTL, Westowan, Porthtowan, Cornwall TR4 8AX, with your name and address and ask for the Spectrum *Music* program cassette

There are no program notes because I have used plenty of Rems in the program itself Also the program is largely self-explanatory by text in the various menus

```
 100 REM SET VARIABLES
 110 REM
 120 LET flag=0: LET LENGTH=16: LET DURATION=LENGT
H: LET START=0: LET M$="": LET N$=M$
 130 REM EDITOR LOOP START
 140 REM
 150 POKE 23658 8: BORDER 1: INK 4: PAPER 1: CLS :
 PRINT "PRESS FOLLOWED BY A NUMBER:"
 160 PRINT  INK 6;"      U UP
     D DOWN                        L LENGTH (I
F CHANGED)            OF PREVIOUS NOTE"
 170 PRINT "PRESS"; INK 6;" ZLO"; INK 4;" TO ZERO
NOTE COUNTER": PRINT  INK 6;"N.B."; INK 4;"follow
next note by a length";
 180 PRINT "START NOTE = 0        (MIDDLE C)  LENGTH
  = 1 SEC, IE 16 UNITS"
 190 PRINT AT 10,0; PAPER 7; INK 0;"

"; REM 2 LINE OF SPACES
 200 PRINT AT 14,0;"PRESS"; INK 6;" I"; INK 4;" TO
 GO TO SUB STRING MENU"''
 210 PRINT "LEFT AND RIGHT AND DELETE KEYS  CAN BE
 USED TO EDIT."''
 220 PRINT "PRESS ENTER  TO COMPILE AND PLAYSTRING
 TO LEFT OF  STEP ."
 230 PRINT  BRIGHT 1;#1;AT 0,0; INK 3;" BEEP MUSIC
  by   J   de Rivaz        (C) 16 January  1985
  ";
 240 INK 0: PAPER 7:  GO TO 460
 250 REM INKEY$ AND PUT IN M$
 260 REM
 270 LET A$=INKEY$: IF A$="" THEN  GO TO 270
 280 IF A$=CHR$ 13 THEN  CLS : PRINT "COMPILING ..
.": GO TO 510
 290 IF A$="I" THEN  GO TO 1070
 300 REM DELETE AND  MOVE
 310 REM ---------------
 320 IF A$=CHR$ 12 AND LEN M$>1 THEN  LET M$=M$( T
O LEN M$-1): GO TO 460
 330 IF A$=CHR$ 12 AND LEN M$=1 THEN  LET M$="": G
O TO 460
 340 IF A$=CHR$ 9 AND LEN M$>1 THEN  LET N$=M$(LEN
 M$)+N$: LET M$=M$( TO LEN M$-1): GO TO 460
 350 IF A$=CHR$ 9 AND LEN M$=1 THEN  LET N$=M$+N$:
 LET M$="": GO TO 460
 360 IF A$=CHR$ 8 AND N$<>"" THEN  LET M$=M$+N$(1)
: LET N$=N$(2 TO ): GO TO 460
 370 REM TEST FOR CORRECT CHR$
 380 REM ----------------------
 390 IF A$<>"." AND A$<>"L" AND A$<>"U" AND A$<>"D
" AND A$<>"Z" AND (A$<"0" OR A$>"9") THEN  GO TO 2
70
 400 REM ANTI BOUNCE
 410 REM -----------
 420 IF INKEY$<>"" THEN  GO TO 420
 430 REM ADD TO M$ AND  PRINT
 440 REM ----------------------
 450 LET M$=M$+A$
 460 IF LEN M$<15 THEN  PRINT AT 10,14-LEN M$;" ";
M$: GO TO 480
 470 PRINT AT 10,0;M$(LEN M$-14 TO )
 480 IF LEN N$<18 THEN  PRINT AT 11,15;N$;" ": GO
```

```
TO 660
 490 PRINT AT 11,15;M$( TO 15);" "
 500 GO TO 770
 510 REM COMPILE BEEP ARRAYS
 520 REM
 530 REM count no of notes
 540 REM ----------------
 550 LET C=0: FOR N=1 TO LEN M$
 560 IF M$(N)="U" OR M$(N)="D" OR M$(N)="Z" THEN
LET C=C+1
 570 NEXT N
 580 REM SET UP ARRAY
 590 REM ----------
 600 LET N=0: DIM B(C,2): LET J=1: LET B(1,1)=LENG
TH: LET B(1,2)=START
 610 REM COMPILER LOOP
 620 REM -----------
 630 LET N=N+1: IF N>LEN M$ THEN  GO TO 800
 640 IF M$(N)="U" THEN  LET L$="": LET V$=" ": GO
 650 IF M$(N)="D" THEN  LET L$="": LET V$="-": GO
TO 650
 660 IF M$(N)="L" THEN  LET V$="": LET L$=" ": GO
TO 650
 670 IF M$(N)="Z" THEN  LET B(J,2)=0: LET B(J,1)=B
(J-(J>1),1): GO TO 630
 680 IF N+1>LEN M$ THEN  LET B=1: GO TO 700
 690 LET B=(M$(N+1)<"0" OR M$(N+1)>"9") AND M$(N+1
)<>"."
 700 IF V$="" THEN  GO TO 740
 710 LET V$=V$+M$(N)
 720 IF B AND J<=C THEN  LET B(J,2)=B(J-(J>1),2)+V
AL V$+(000 (B(J-(J>1),2)+VAL V$)<70): LET B(J,1)=B
(J-(J>1),1): IF N+1<LEN M$ THEN  LET J=J+(M$(N+1)<
>"L")
 730 GO TO 630
 740 IF L$="" THEN  GO TO 780
 750 LET L$=L$+M$(N)
 760 IF B AND J<=C THEN  LET B(J,1)=VAL L$: LET J=
J+1
 770 GO TO 630
 780 REM SPACE FOR MORE FUNCTIONS
 790 GO TO 630
 800 REM  PRINT  AND CONSTRAIN BEEP ARRAY
 810 REM
 820 PRINT "DURATION" "NOTE"
 830 FOR J=1 TO C
 840 FOR I=1 TO 2
 850 IF B(J,2)>60 THEN  LET B(J,2)=60
 860 IF B(J,2)<-60 THEN  LET B(J,2)=-60
 870 PRINT B(J,I),: POKE 23692,0
 880 NEXT I: NEXT J
 890 PRINT M$
 900 REM  BEEP ARRAY, WITH INKEY$
 910 REM
 920 FOR J=1 TO C
 930 BEEP B(J,1)/16,B(J,2)
 940 LET A$=INKEY$: IF A$<>"" THEN  GO TO 1010
 950 NEXT J
 960  REM  PRINT MENU OF OPTIONS WHILST PLAYING AN
Y
 970 REM
 980 REM Tune is played once before menu printed.
 990 CLS : PRINT "PRESS E - GO BACK TO EDITOR
    S -  SAVE                      L -  LPRINT
ARRAY                B - END PROGRAM
  R - START AFRESH."
1000 LET L=14*32: PRINT "AT( TO LEN M$=(LEN M$<L)+
L*(LEN M$>=L))
1010 IF A$="B" THEN  STOP
1020 IF A$="S" THEN  INPUT "NAME? ";Z$: LET Z$=Z$+
"        ": LET A$=Z$( TO 7): SAVE A$ DATA B()
1030 IF A$="L" THEN  FOR J=1 TO C: FOR I=1 TO 2: L
PRINT B(J,I),: NEXT I: NEXT J: LPRINT
1040 IF A$="E" THEN  GO TO 150
1050 IF A$="R" THEN  RUN
1060 GO TO 920
1070 REM INSERT TUNES
1080 REM
1090 CLS : PRINT "Press as follows:"''
1100 PRINT "1,2, OR 3  TO TRANSFER LEFT PART OF MA
IN STRING TO REPLACE        CURRENT CONTENTS OF NUM
BERED    SUB STRING"''
1110 PRINT "A,B, OR C TO TRANSFER SUB STRING TO MAI
N STRING AT POSITION OF    SPLIT."''
1120 PRINT "E TO RETURN TO EDITOR"
1130 LET A$=INKEY$: IF A$="" THEN  GO TO 1130
1140 IF A$="E" THEN  GO TO 150
1150 IF A$="1" THEN  LET C$=M$: GO TO 150
1160 IF A$="2" THEN  LET D$=M$: GO TO 150
1170 IF A$="3" THEN  LET E$=M$: GO TO 150
1180 IF A$="A" THEN  LET M$=M$+C$: GO TO 150
1190 IF A$="B" THEN  LET M$=M$+D$: GO TO 150
1200 IF A$="C" THEN  LET M$=M$+E$: GO TO 150
1210 GO TO 1130
8900 REM  SAVE whole program
8990 REM
9000 FOR F=1 TO 3: POKE 23736,181: SAVE "MUSIC": N
EXT F
```

Equitable solutions

This week a powerful equation solver for the Sinclair QL from the keyboard of ***Jeff Tope***

If you have ever sat down and tried to solve an equation, or a set of simultaneous equations, then this program might be what you wanted. It is designed so that you can use either a formula defined in Line 110 or a polynomial which may be input within the program. The limitation of the QL string evaluation command prevents a formula being input during the program

Contained within the program are brief summaries of each method which may be called up by hitting *F1* (help) whilst the menu is on the screen after selecting the appropriate method using the cursor line: to select the method just hit *Enter*.

The program is not totally error trapped but commonsense should show that it is easy to use.

The methods employed are standard methods used in many applications but for a full description you should see an advanced numerical analysis textbook. A brief note on the Newton Raphson method ought answer a few questions – the method differentiates the polynomial equation using the procedure *'newton'* thus being unable to differentiate anything other than a polynomial equation.

Notes

100-120	function definition.
130-840	screen definition, menu and help
850-930	select method.
940-1180	get polynomial or tell to define in line 110
1190-1260	evaluate relevant function
1270-1340	get y as or no answer to given message on a given channel.
1350-1580	get two values for Bisection and Regula Falsi having opposite function values
1590-1890	solve by Bisection or Regula Falsi method.
1900-2330	solve by Newton Raphson method.
2340-2930	input create and save then solve, load alter array and solve simultaneous equations

```
100 DEFine FuNction f(x)
110 RETurn x*x*x+LN(x)-19
120 END DEFine
130 MODE 4
140 WINDOW#0,512,256,0,0:PAPER#0,0:CLS#0
150 WINDOW#0,480,46,16,210
160 WINDOW#1,480,200,16,10
170 WINDOW#2,240,200,256,10
180 CLS#0:CLS#1
190 INK#1,7
200 CSIZE 3,1:PRINT\\\\'     JEFF TOPE  APR 85'\\'
     EQUATION SOLVER'
210 BORDER#0,3,4
220 CSIZE 0,0
230 INK#0,7
240 INK#2,0
250 PAUSE 250
260 REMark COPYRIGHT JEFF TOPE FEB 1985
270 REMark EQUATION SOLVER
280 method=5:key=0
290 largpow=0:fresol=0:root=0
300 REPeat main_loop
310 MENU
320 INK 7
330 IF key=10:solve method
340 END REPeat main_loop
350 DEFine PROCedure MENU
360 front=0:root=0
370 CSIZE 3,1:PAPER 2:INK 7:CLS:PRINT'
     EQUATION SOLVER':CSIZE 0,0
380 PRINT\'METHODS AVAILABLE';TO 35;'TYPES OF EQUAT
ION';TO 60;'TYPE OF SOLUTION'\\'BISECTION';TO 35;'POL
YNOMIALS';TO 60;'(ONE ROOT)'\'REGULA FALSI';TO 35;'P
OLYNOMIALS';TO 60;'(ONE ROOT)'\'NEWTON RAPHSON';TO 3
5;'POLYNOMIALS';TO 60;'(ALL ROOTS)'
390 PRINT'GAUSSIAN ELIMINATION';TO 35;'SIMULTANEOUS
EQUATIONS';TO 60;'(ALL ROOTS)'\\'F1 FOR HELP '\'>,?
TO CHANGE METHOD'\'ENTER TO PROCEDE WITH METHOD'
400 REPeat type
410 OVER 1:INK 4:AT method,0:PRINT FILL$(" ",80)
420 key=CODE(INKEY$)
430 SELect ON key
440 =10:CLS:RETurn
450 =232:help method:RETurn
460 =208
470 INK 2:AT method,0:PRINT FILL$("_",80):INK 7:
OVER 0
480 IF method=5
490    method=8
500 ELSE
510    method=method-1
520 END IF
530 =216
540 INK 2:AT method,0:PRINT FILL$("_",80):INK 7:
OVER 0
550 IF method=8
560    method=5
570 ELSE
580    method=method+1
590 END IF
600 END SELect
610 END REPeat type
620 END DEFine
630 DEFine PROCedure help (routine)
640 PAPER 2:INK 7:CLS
650 SELect ON method
660 =5
670 CSIZE 3,1:PRINT 'BISECTION'
680 CSIZE 1,0:PRINT\\'This method will ';:UNDER 1:P
RINT'always';:UNDER 0:PRINT' find a real root withi
n the bounds passed to the routine, if such a root
exists.'\'The root will be found within the required
 error, upto the approximately equal as defined in
the QL manual.'
690 PRINT 'The method requires two x coordinates one
  giving a positive function value and the other a n
egative function value.'\'The method then halves the
  difference between the two x coords and evalua
tes the value of the function at the point.If the fun
ction value at this point is positive/negative  th
en the x coord giving the positive/negative function
  values set to this mid point.'\'The process is rep
eated until the difference between the x coords is
less than the error limit.'\\'NOTE Regula Falsi is o
ften quicker.'
700 =6
710 CSIZE 3,1:PRINT 'REGULA FALSI'
720 CSIZE 1,0:PRINT\\'This method will ';:UNDER 1:P
RINT'always';:UNDER 0:PRINT' find a real root within
 the bounds passed to the routine, if such a root ex
ists.'\'The root will be found within the required er
ror, upto the approximately equal as defined in the
 QL manual.'
730 PRINT 'The method requires two x coordinates one
  giving a positive function value and the other a ne
gative function value.'\'The method then draws a line
  between the two function values and evaluates the va
lue of the function at the intersection of the line
  with the axis.'\'If the intersection value is    pos
itive/negative then the x coord giving the positive/
   negative function value is set to this intersect
ion value.'\'The process is repeated until the differ
ence between the x coords is less than the error lim
it.'\'If one point does not move for 3 or more ittera
tions then  the effective function value at this poi
nt is halved until it does move. This speeds conver
sion'
740 =7
750 CSIZE 3,1:PRINT 'NEWTON RAPHSON'
760 CSIZE 1,0:PRINT'This method will generally find
  all the real roots, if they exist.'\'The root will
  be found within the required error, upto the appro
ximately equal as defined in the QL manual.'
770 PRINT'The routine requires only an initial guess
.'\
780 PRINT 'The method works by drawing a tangent at
 each guess. The  value of the function at the inte
rsection of the tangent is evaluated and if it is wit
hin the error criterion the it is assumed to be a ro
ot;'\'Otherwise it is taken to be the new guess and
  the procedure repeated until either a root is found
  or the routine detects tangent parallel to the x a
xis.'\'If a root is found then it is divided out of t
he equation.  This continues until only a straight l
ine is left. the      routine then calculates the ro
ot directly.'\'NOTE'\'The procedure could be repeated
 with each root being the    initial  guess to obtain
 a better estimate of each root.'
790 =8
800 CSIZE 3,1:PRINT 'GAUSSIAN ELIMINATION'\\
810 CSIZE 1,0:PRINT 'This routine solves an NxN matr
ix of simultaneous equations by gaussian elimination.
'\'The equations must be linearly independant for a s
olution to exist.'\'The routine will accept the matrix
 from the keyboard or from a microdrive file or a limi
ted combination of both.'
820 END SELect
830 PAUSE:CLS
840 END DEFine
850 DEFine PROCedure solve(method)
860 CLS:OVER 0
870 SELect ON method
880 =5:BISECT(1)
890 =6:BISECT(0)
900 =7:NEWRAP
910 =8:GAUSS
920 END SELect
930 END DEFine
940 DEFine PROCedure getfn(option)
950 REPeat pattern
960 IF largpow>0
970 CLS:PRINT 'Present function is :-'
980 FOR power=largpow TO 0 STEP -1:PRINT  x^';power;'
```

```
= 'skip'&power.0)
990 PAPER#0,7:CLS#0:PAPER#0,0:CLS#0:ans=yesno( 0,"re
define the function?")
1000 IF NOT ans :RETurn
1010 END IF
1020 IF NOT option1 :ans=1:EXIT waitans
1030 ans=yesno(0,"Is the function of positive integer
  powers of x only ")
1040 EXIT waitans
1050 END REPeat waitans
1060 IF ans
1070 INPUT "largest coefficient of x is of power ?";l
arpow
1080 PRINT "input powers of x,largest to smallest (sm
allest being a constant)"
1090 DIM alpha(larpow+1,2):FOR power=larpow TO 0 STEP
 -1:INPUT "coeff of x^";(power)!alpha (power,0):alpha
(larpow+1-power,1)=alpha(power,0):alpha(larpow+2-power
,2)=alpha(larpow+1-power,1)
1100 usew=1
1110 ELSE
1120 PRINT "Sorry you will have to define your functi
on in line 110"
1130 usew=0
1140 END IF
1150 END DEFine
1160 DEFine FuNction g(111)
1170 IF usew
1180 dum=0
1190 FOR counter=larpow TO 0 STEP -1:dum=dum*111+alph
a(counter,0)
1200 val=dum
1210 ELSE
1220 val=f(111)
1230 END IF
1240 IF val=0:froot=1:root=111
1250 RETurn val
1260 END DEFine
1270 DEFine FuNction yesno(chan,mess$)
1280 REPeat ynwait
1290 INPUT #chan (mess$);"[(y)es or(n)o]";answer$
1300 IF "y" INSTR answer$ OR "n" INSTR answer$ :EXIT y
nwait
1310 END REPeat ynwait
1320 IF "y" INSTR answer$:CLS#chan:RETurn 1
1330 CLS#chan:RETurn 0
1340 END DEFine
1350 DEFine PROCedure oppvals
1360 REPeat BISPH
1370 INPUT "LOWER LIMIT OF X ?";low$
1380 INPUT "UPPER LIMIT OF X?";high$
1390 IF low$="" OR high$="":RETurn
1400 low=low$:high=high$
1410 FL=g(low)
1420 FH=g(high)
1430 PRINT "F(";(low);") = ";FL
1440 PRINT "F(";(high);") = ";FH
1450 IF FL*FH<=0
1460 INPUT "error limit ";eerr
1470 IF eerr<=0
1480 eerr=1E-7:EXIT BISPH
1490 ELSE
1500 EXIT BISPH
1510 END IF
1520 END IF
1530 PRINT "F(low) and F(high) must have opposite sig
ns"
1540 END REPeat BISPH
1550 END DEFine oppvals
1560 DEFine PROCedure BISECT(bistog)
1570 getfn(1)
1580 oppvals:IF low$="" OR high$="" :RETurn
1590 IF NOT bistog:stickh=0:stickl=0:sfFM=FH:sfl=FL
1600 REPeat BISLOOP
1610 IF bistog
1620 mid=(high+low)/2
1630 ELSE
1640 mid=(low*FH-high*FL)/(FH-FL)
1650 END IF
1660 FM=g(mid)
1670 IF froot:PRINT \\"Root is : ";root\\:PRINT#0;"Pr
ess any key to continue":PAUSE:CLS#0:EXIT BISLOOP
1680 IF FM*FH>0
1690 FH=FM
1700 high=mid
1710 IF NOT bistog
1720 stickh=0
1730 stickl=stickl+1:IF stickl>2:FL=FL/2
1740 END IF
1750 ELSE
1760 FL=FM
1770 low=mid
1780 IF NOT bistog
1790 stickl=0
1800 stickh=stickh+1:IF stickh>2:FH=FH/2
1810 END IF
1820 END IF
1830 IF ABS(high-low)<=eerr
1840 PRINT "Root is ";(high+low)/2;" to within error
 of ";eerr
1850 PRINT "Any key to continue":PAUSE
1860 EXIT BISLOOP
1870 END IF
1880 END REPeat BISLOOP
1890 END DEFine
1900 DEFine PROCedure NEWRAP
1910 getfn(0)
1920 INPUT "Initial guess for method ";guess$
1930 guess=0:IF guess$<>"":guess=guess$
1940 INPUT "error limit ";eerr$
1950 IF eerr$="" OR CODE(eerr$)>CODE("9") OR CODE(eerr$
)<CODE("0"):eerr$=0
1960 eerr=eerr$
1970 IF eerr<=0:eerr=1E-7
1980 INPUT "Maximum number of iterations ";itermax:
iters=0:IF itermax<0:itermax=10
1990 m=larpow:converged=0
2000 FOR i1=1 TO larpow-1
2010 REPeat newloop
2020 IF converged :EXIT newloop
2030 xsl=guess
2040 newton
2050 IF ABS (xsl-guess)<=eerr:converged=1
2060 IF ABS (xsl-guess)>1E30:PRINT "Not convergent use
 another method"\"Press any key ":PAUSE:RETurn
2070 IF iters>itermax :PRINT "Has not converged will
hin maximum number of iterations, use another method
."\"Press any key ":PAUSE:RETurn
2080 END REPeat newloop
2090 PRINT "A root is ";guess,iters;" iterations we
re required"
2100 syndiv:iters=0
2110 m=m-1
2120 converged=0
2130 END FOR i1
2140 PRINT "A root is ";-alpha(2,1)/alpha(1,1)
2150 PRINT "Press any key to continue":PAUSE:RETurn
2160 END DEFine
2170 DEFine PROCedure syndiv
2180 FOR i=2 TO m:alpha(i,1)=alpha(i,1)+alpha(i-1,1)
*guess
2190 END DEFine
2200 DEFine PROCedure newton
2210 guess=guess-bbb(1)/ddd(1):iters=iters+1
2220 END DEFine
2230 DEFine FuNction bbb(j)
2240 bb1=0
2250 FOR i=1 TO m+1:bb1=(bb1+alpha(i,1))*guess
2260 RETurn bb1
2270 END DEFine
2280 DEFine FuNction ddd(j)
2290 bb1=0
2300 FOR i=1 TO m:bb1=(bb1+alpha(i,1)*(m-i+1))*gue
ss
2310 IF bb1=0:bb1=1E-6
2320 RETurn bb1
2330 END DEFine
2340 DEFine PROCedure GAUSS
2350 ans=yesno( 0,"Do you wish to create a new array
 (yes) or read an old array in and alter it (no)")
2360 IF ans
2370 INPUT "How many equations to solve ?";n
2380 DIM array(n-1,n):PRINT "Input all of the elemen
ts of row in the form:-"\"a1(enter)a2(enter)...aN(en
ter)rhs(enter) which stands for a1x1+a2x2...aNxN=rhs"
2390 FOR i=1 TO n
2400 PRINT\"Row ";i,:FOR j=0 TO n:INPUT array(i-1,j
),
2410 END FOR i
2420 IF yesno(0,"Do you wish to save the array ?"):IN
PUT \"file name e.g. mdv1_file : ";file$:OPEN_NEW#5,f
ile$:PRINT#5;n\array:CLOSE#5
2430 ELSE
2440 INPUT \"file name  to load e.g. mdv1_file : ";fi
le$:OPEN_IN#5,file$:INPUT#5;n:DIM array(n-1,n)
2450 FOR i=0 TO n-1
2460 FOR j=0 TO n:INPUT#5,array(i,j)
2470 END FOR i
2480 CLOSE#5
2490 FOR i=0 TO n-1:PRINT array(i),\
2500 END IF
2510 REPeat alter
2520 IF NOT yesno(0,"alter an element ?"):EXIT alter
2530 INPUT "which element to alter ? row,column,elem
ent";i,j,array(i,j)
2540 END REPeat alter
2550 REMark solve the equations
2560 n1=n-2
2570 FOR i=0 TO n1
2580 pvt=i
2590 i1=i+1
2600 FOR j=i1 TO n-1
2610 IF ABS(array(pvt,i))<ABS(array(j,i)):pvt=j
2620 END FOR j
2630 IF array(i,pvt)=0:PRINT#0;\"Equations are not in
dependant to simple roots"\"Any key for Menu":PAUSE:R
ETurn
2640 IF i<>pvt
2650 FOR swap=i TO n
2660 dum=array (i,swap)
2670 array(i,swap)=array(pvt,swap)
2680 array (pvt,swap)=dum
2690 END FOR swap
2700 END IF
2710 FOR row=i1 TO n-1
2720 IF array(row,i)<>0
2730 ratio=array(row,i)/array(i,i)
2740 FOR col=i TO n
2750 array(row,col)=array(row,col)-ratio*array(i,col)
2760 END FOR col
2770 END FOR row
2780 END IF
2790 END FOR i
2800 IF array(n-1,n-1)=0:PRINT#0;\"Equations are not
 independant to simple roots"\"Any key for Menu":PAU
SE:RETurn
2810 array (n-1,n)=array(n-1,n)/array(n-1,n-1)
2820 FOR j=n-2 TO 0 STEP -1
2830 value=array(j,n)
2840 FOR k=j+1 TO n-1
2850 value=value-array(j,k)*array(k,n)
2860 END FOR k
2870 array(j,n)=value/array(j,j)
2880 END FOR j
2890 PRINT:FOR j= 0  TO n-1:PRINT "x";(j+1);"=";arra
y(j,n)
2900 PRINT "Press any key for menu"
2910 PAUSE
2920 END DEFine
```

An unbroken run

A short assembly language routine to disable the Break key on the BBC B by ***Joe Pritchard***

It is well known that the *Break* key can be partially disabled on the BBC computer by the **Key 10* command. In this short routine I present a possible solution to the problem of *Control/Break* being used to stop a running Basic program. The program was written under OS 1.20 and Basic II.

Once the below routine has been executed, pressing *Break* or *Ctrl-Break* will cause the program to be re-run. *Escape* is also disabled using the **FX229* command.

Description

The routine uses the **FX247,248* and *249* commands to set up a jump command for the BBC micro to execute whenever the *Break* key is pressed. The **FX138,0,n* command is used repeatedly to put the commands *Old (Return) Run (Return)* into the keyboard buffer. Once this has been done, a *JMP* through vector *&FFF4* is made to finish off.

Obviously, this routine should be one of the first things that gets executed in your program. It should be quite useful in places where you don't want *Ctrl-Break* to totally stop the program, such as educational programs and demonstration software.

```
 10 *KEY 10|MRUN|M
 20 *FX229,1
 25 FOR I=0 TO 2 STEP 2
 30 P%=&C00
 40 [OPT I
 50 BCS CONT:RTS
 60 .CONT LDA #229:LDX#1:JSR &FFF4
 61 LDY #79: JSR o
 70 LDY #46: JSR o
 80 LDY #13: JSR o
 90 LDY #82: JSR o
100 LDY #85: JSR o
110 LDY #78: JSR o
120 LDY #13: JSR o
130 .o LDA #138: LDX #0:JSR &FFF4:RTS
140 ]: NEXT
150 *FX247,76
160 *FX248,0
170 *FX249,12
180 REM  (NOW YOUR PROGRAM!)
```

Lost and found

Retreave those bad loads on the CBM 64 with this useful routine by ***Geoff Hato***

When using Basic, typing the word *New* doesn't actually erase the current text in memory it just resets some system pointers It would be nice to have an *Old* command which would recover this text. Many commands of this type have already been written, but most, however, would not cope when asked to recover Basic text from faulty tape loads or after some types of 'crash', etc This is because the link addresses and Basic text pointers may have become corrupted.

This program completely rebuilds all of the link addresses in the Basic text and resets the relevent text pointers in the operating system. This means that even if several bytes of text are corrupted, the main part of the program will still be recovered and can be edited in the usual way to remove odd lines and characters This is particularly useful for recovering Basic text from faulty tape loads Sometimes, after a load error, parts of Basic text can be seen if the program is listed, but if an attempt is made to run or edit the program the computer often crashes After running this program, it is possible to treat the recovered text as normal.

Also, one or more Basic programs can be stored in memory at any one time (with care!). To do this, the start of Basic pointer (*TXTTAB*) is adjusted to the start of the new text, and then the program can recover text at that location, correctly setting the text pointers For example to set the start of Basic to location 5000 (DEC) type Poke 43,136 (low byte of 5000), Poke 44,19 (high byte of 5000) Sys 679, NEW.

Because the program automatically keeps track of the start of Basic, it will work with any memory configuration.

Note, this program can still be used even after a complete power reset, (ie SYS(64738) This is often useful when the *Run/Stop* and *Restore* keys are no longer working

To provide maximum flexibility, the program itself cannot be situated in memory which could be used for Basic programs Therefore the program has been located in an area of memory unused for Basic text, starting at *$02A7 (HEX)*

To use the program, either.– (1) Load in before any program development, and type *Sys679* when required. (2) Load in after experiencing problems in Basic and immediately typing *Sys679* (Note, the program itself will be lost after a power reset, so reload as described in (2) to recover the text)

To get a copy of Relink on tape, type in Program 1 and save it (Changing line 180 in program 1 if disc operation is required) Now place a blank tape in the tape deck (or disc in the disc drive) and run the program. This will save a copy of the program on tape (or disc)

To check for correct program operation, type *New* followed by *Sys679* *Ready* should appear and the recovered program can be re-listed.

To test the recorded copy, Type SYS64738 and then LOAD"RELINK 64",1,1 for tape, or LOAD"RELINK 64",8,1 for disk Typing SYS679 should now recover the original program.

```
10 REM *****************
20 REM **  RELINK 64  **
30 REM ** G.HATTO '85 **
40 REM *****************
50 :
60 READ ADDRESS
70 :
80 REM  READ CODE INTO RAM
90 :
100 FOR  INDEX=0 TO 87
110 READ ENTRY
120 POKE ADDRESS+INDEX,ENTRY
130 NEXT INDEX
140 :
150 REM SAVE CODE TO DEVICE
160 :
170 REM DEVICE TAPE=1 DISK=8
180 DEVICE = 1
190 :
200 SYS 57812"RELINK 64",DEVICE,1
210 :
220 POKE252,(ADDRESS)AND255
230 POKE253,(ADDRESS)/256
240 POKE780,252
250 POKE781,(ADDRESS+INDEX)AND255
260 POKE782,(ADDRESS+INDEX)/256
270 :
280 SYS 65496:END
290 :
300 DATA 679
310 :
320 DATA 56,165,43,233,1,133,45,165
330 DATA 44,233,0,133,46,169,0,168,145
340 DATA 45,160,2,152,145,45,32,227
350 DATA 2,160,0,32,233,2,177,45,208
360 DATA 247,200,177,45,208,234,200
370 DATA 177,45,208,229,32,230,2,32
380 DATA 233,2,32,51,165,32,96,166,76
390 DATA 116,164,32,230,2,32,233,2
400 DATA 230,45,208,2,230,46,165,46
410 DATA 197,56,208,4,165,45,197,55
420 DATA 176,1,96,76,53,164
```

```
10 ;PROG     BASIC RELINK    G HATTO
20 ;         ----------------------
30 ;
40 ;                       19/04/85
50 ;
60 ;
70 ;
80 ;         REBUILDS BASIC LINKS IN
90 ;         MEMORY AND RESTORES ALL
100 ;        BASIC TEXT POINTERS
110 ;
120 ;
130            ORG $02A7      ;VIC 20   ORG $02A1
140 ;
150 TXTTAB     EQU $002B
160 VARTAB     EQU $002D
170 MEMSIZ     EQU $0037
180 OUTOFMEM   EQU $A435      ;VIC 20   EQU $C435
190 READY      EQU $A474      ;VIC 20   EQU $C474
200 REDCHAIN   EQU $A533      ;VIC 20   EQU $C533
```



```
CLR      EQU $A660       ;VIC 20   EQU $C660
;
;
;
;        **** INITPTR ****
;
;
;        SETS END OF PROGRAM PTR
;        TO  (START OF BASIC)-1.
;
;
INITPTR  SEC
         LDA TXTTAB       ;GET END OF PROGRAM LOW BYTE
         SBC #$01         ;TO (START)-1.
         STA VARTAB       ;
         LDA TXTTAB+1     ;GET END OF PROGRAM HIGH BYTE
         SBC #$00         ;TO (START)-1.
         STA VARTAB+1     ;
         LDA #$00         ;STORE A ZERO INTO START OF
         TAY              ;BASIC MEMORY
         STA (VARTAB),Y   ;
;
;
;
;        **** LINKFILL ****
;
;
;        FILLS  THE HIGH BYTE OR
;        CURRENT LINK WITH  NON-
;        ZERO VALUE TO ALLOW FOR
;        PROPER RECHAINING
;
;
LINKFILL LDY #$02         ;LOAD Y WITH OFFSET FOR 1ST LINK.
         TYA              ;STORE NON-ZERO VALUE IN  A  REG
         STA (VARTAB),Y   ;FILL CURRENT LINK
         JSR VAR4INC      ;ADD 4 TO END OF PROGRAM PTR.
;
;
;
;        **** FINDEOP ****
;
;
;        FIND  END  OF  PROGRAM,
;        FLAGGED WITH THREE ZERO
;        BYTES
;
;
;
FINDEOP  LDY #$00
         JSR VARINC       ;ADD 1 TO END OF PROGRAM PTR.
         LDA (VARTAB),Y   ;LOAD BASIC TEXT BYTE
         BNE FINDEOP      ;IF NOT ZERO SEARCH AGAIN.
;
         INY              ;POINT TO FIRST LINK BYTE.
         LDA (VARTAB),Y   ;LOAD FIRST LINK BYTE.
         BNE LINKFILL     ;IF NOT ZERO THEN FILL LINK.
         INY              ;POINT TO SECOND LINK BYTE.
         LDA (VARTAB),Y   ;LOAD SECOND LINK BYTE
         BNE LINKFILL     ;IF NOT ZERO THEN FILL LINK
;
         JSR VAR2INC      ;SET FINAL END OF PROGRAM PTR.
         JSR VARINC       ;
         JSR RECHAIN      ;RECHAIN BASIC TEXT.
         JSR CLR          ;CLEAR STACK AND TEXT PTRS.
         JMP READY        ;EXIT PROGRAM.
;
VAR4INC  JSR VAR2INC      ;ADD 4 TO END OF PROGRAM PTR
VAR2INC  JSR VARINC       ;ADD 2 TO END OF PROGRAM PTR.
VARINC   INC VARTAB       ;ADD 1 TO END OF PROGRAM PTR
         BNE ENDMEM       ;
         INC VARTAB+1     ;
;
ENDMEM   LDA VARTAB+1     ;CHECK FOR FREE MEMORY
         CMP MEMSIZ+1     ;FOR END OF PROGRAM PTR
         BNE ISMEMEND     ;
;
         LDA VARTAB       ;
         CMP MEMSIZ       ;
ISMEMEND BCS NOMEM        ;CHECK AVAILABLE MEMORY
         RTS              ;FREE MEMORY LEFT.
;
NOMEM    JMP OUTOFMEM     ;PRINT  OUT OF MEMORY  AND EXIT
;
;
;
```

Open Forum

We are always actively seeking programs for publication – either for Open Forum, the machine pages or Star Game. When sending in a program for consideration, a clear program listing should be sent, together with, wherever possible, a saved copy on cassette. Documentation – usually not more than 1000 words – should start with a general description of the program, what it does, and then some detail of how the program itself is constructed. We pay very competitive rates, according to the length and nature of the program and the quality of the accompanying documentation.

Distinct Rems

on Commodore 64

This machine code routine takes all the Rem statements in a program and inserts the Reverse code symbol before the statement of the text within the Rem statement – thus making it appear in reverse. In this way, listings can be made a lot clearer, because important Rems that demarcate particular sections of the program are highlighted. It works in the CBM64 and the Vic – and with one byte difference, also on Pets!

Instructions for use are within the program.

```
1 REM *** DISTINCT-REMS  ***
2 :
3 REM  ** BY M. C. HART  **
4 :
5 FORJ=820 TO 882:READ X
6 T=T+X:POKE J,X:NEXT
7 READ C:IF T<>C THEN PRINT"ERROR":END
8 REM SYS 820 TO ACTIVATE
9 :
10 : DATA 165,44:REM C64/VIC BY DEFAULT
11 : REM  FOR PETS CHANGE TO 165,41
12 DATA 133,89,169,5,133,88
13 DATA 160,0,177,88,240,19,201,143
14 DATA 240,3,230,88,208,242,230,89
15 DATA 208,230,200,169,18,145,88,200
16 DATA 241,200,177,88,208,17,88,240
17 DATA 13,24,169,5,101,88,133,88
18 DATA 144,214,230,89,176,210,96
19 DATA 7494:REM CHECKSUM
20 :
21 REM END OF DEMO
22 :
100 REM TO CHANGE BACK THEN:
110 :
120 REM POKE 856,32:SYS820:LIST
130 :
140 REM TO RESTORE 'DISTINCT' THEN:
150 :
160 REM POKE 856,18:SYS820:LIST
```

Distinct Rems
by M Hart

Book Ends

Book *Idea Book, Commodore 64* **Price** £7.95 **Micro** Commodore 64 **Supplier** First Publishing, Unit 20B, Horseshoe Road, Horseshoe Industrial Estate, Pangbourne, Berks.

An odd book this. Firstly it's set directly from a computer printer, which gives it a less than smooth appearance. Secondly it's translated from German into English – or rather *American* English (spellings, dates, etc) – resulting in some stilted prose.

Thirdly its style is surprisingly chatty, with some rather weak humour.

And fourthly it embraces ideas for home and hobby use of the C64, the use of commercial word processing and data handling packages and even a few listings.

I began by disliking it, but eventually adjusted to all but the cheapo layout. It's not free of minor factual errors and concentrates, not surprisingly, on First Publishing's own software, but should provide a spur for those who wonder if their Commodore can do more than play games without wanting anything too technical.

John Minson

Book *The Ins and Outs of the Amstrad CPC 464* **Micro** CPC 464 **Price** £7.95 **Supplier** Melbourne House Ltd, Castle Yard House, Castle Yard, Richmond TW10 6TF

This book for reasonably experienced users attempts to give an explanation of how the firmware of screen, sound, cassette drive, etc, are accessed and controlled by the CPU and how to exploit the OS in your own programs.

It suffers by falling between the stools of theory and practice and the author is not guilty of overexplaining things to beginners. Indeed he seems to be desperate to avoid working examples under the excuse of 'not wanting to limit the reader's imagination'. There is an extensive list of useful OS calls – cheaper than buying the firmware manual but less extensive – and also hints, no details, on how to implement extension Roms, build a full 8 bit printer port, etc. Still, it is a good buy for ambitious people and has improved my understanding of how to get the best from the 464.

Tony Kendle



Endless lives

The big news that has come out, and I know that it will get most of you groaning with disbelief, is that Hewson Consultants have heard from the first person to have finished *Technician Ted*. As I have said before, I have never heard of a program that has had so many star games players struggling to get anywhere at all. It is remarkable that it has taken so long to be finished, after all, compare it to the speed with which the Ultimate games are completed.

The genius who has done it is Phillip Wainwright of Northampton and you will probably be pleased to hear that Hewson Consultants, with his help, have promised us a long article on how to play the game.

In the mean time Andrew Hewson has particularly asked me to reassure everyone that task 10, the shoe abrasion surface, is extremely difficult, but it is possible. If you get that far you will see that, instead of platforms appearing to allow the task to be done, one of them has actually disappeared!

Now then, people still seem to be getting confused about the Games Wizard competition. Can I explain again that you don't have to enter a score for all three games, especially if you don't have access to them. On the subject, I'm afraid Commodore owners are being shown up again by Spectrum and even Amstrad games players who have sent in many more high scores. It has been suggested to me that the reason Commodore games pokes are so thin on the ground is because they normally load so slowly that almost every program has been protected by some sort of turbo loader.

I just don't believe that; this doesn't apply to ordinary games tips and scores and I am going back to my original theory that many Commodore owners simply can't write.

Anyway to partly prove me wrong, and to try and gee you lot on here is a letter full of tips for one of our competition games, *Suicide Express*, from David Chandler of Enfield. "First of all, when the game has loaded press Restore. The game will begin to read out a high score. Press fire, and hold it down until the game begins. When you start the level should be a zero instead of the usual one and by the time you do reach level one you should have a 4000 points head start. Now for some playing tips. The brown cars can only be destroyed by getting behind them.

"To avoid the planes dropping missiles on you, fire three shots when you see them start to dive. The saucers will not kill you unless you shoot them. The best way to get rid of them is to wait until they are close and then fire at them and stop dead. The saucer will go over your train and crash (make sure there are no cars behind you when you do this).

"Keep your ammo at about 35. At 40 you will get a warning sound and at 50 your train will explode. Don't fire unnecessarily if your ammo is low. Always fire about three shots in the tunnel to avoid being killed. Try to choose a route where you can change lane quickly to avoid hitting doubles of the white things that come towards you. I have reached level 26 and have a top score of 100,000. From level 14 onwards the backgrounds change colour.

"Concerning another Tony Crowther game, *Gryphon*, if you press 'n' on the title screen a test card appears and a tune is played. You can return to the game by pressing 'n' again. Finally, here are my other high scores – *Raid Over Moscow* 295,000 with 8 commandos remaining, *Monty Mole* completed with 14 points, *Boulder Dash* 5049, *Spy Hunter* 499,325, *Daley's Decathlon* 120,195, *Ancipital* 10, 203,195 *Impossible Mission* 19,184." Many thanks for those tips, David.

Sticking with the Commodore for a while, my very great thanks go out to all the people who have written in with solutions to *Staff of Karnath*. To date they include Paul Harris, Mark Francois, Stephen Kirby, Kenneth Devlin and Grant Williamson. So here at last are the tips for the remaining pieces of the pentacle.

To get to the library safely you must use the Stoly spell on the first and third suits of armour, both in and out, to stop them depleting your energy. Once there if you fire the Yerobas spell to the pentacle before you take it you will not have any trouble with the skeleton. The 'hidden compartments' mentioned on the cassette inlay appear to apply to the Dungeon room. Go between the second and third coffins to the wall and you should hear a low sound. Quickly go back to the Dungeons on the right and there should be a piece where the red skeleton was. In the Morning Room go to the left of the table avoiding the bat. Fire at the bowl with the Ibrahim spell until it falls off the table.

Finally, the only other piece we haven't yet mentioned is in the store room. To get this use the Ibrahim spell to shoot the spider in the North Tower Lower. It will give off a high pitched ping. If you quickly go to the store room the pentacle piece should be easy to collect.

Now isn't that a weight off everyone's mind, and just in time to get cracking on *Entombed*. Tips for the latter gratefully received.

Let's finish this week with a cheat routine for a machine that we really don't hear much about in the Avenue. It is for endless lives on the Oric 1 and Atmos versions of *Manic Miner*. I have to confess that I haven't had a chance to test this particular routine, but here it is reproduced exactly as it was sent in by Adrian Woollaston.

"1) Disable Auto-run (I trust this is a straight forward thing to do) 2) Cload first part of *Manic Miner* tape 3) Oric 1 – DOKE £AOA4, £F430 Atmos – DOKE £AOA4 £F893 4) Call £AOOO 5) Play tape from start and load as normal (ignore any error message caused by loader program going in again) 6) When screen clears and 'Ready' appears POKE £683,169 7) Call £6AOO 8) Play it!

"The Oric version is easier to play than the Spectrum one as there seems to be more tolerance in the timing and the clearances needed to avoid collisions."

Correction: Knight Lore routine in May 23 issue. Change Poke 62422,201 to Poke 62426,201

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Between now and September Tony Kendle will be keeping you up to date on the *Arcade Avenue* page with just who has the scores to beat. Then, in September the top three scorers on each machine will battle it out for a place in the final and the chance to be the first to play the top secret games.

	Commodore	BBC	Spectrum	Amstrad
Game 1	Suicide Express	Elite	Technician Ted	Sorcery
Game 2	Beach Head	Jet Pac	3D Star Strike	Splat!
Game 3	Shoot the Rapids	Chuckie Egg	Cyclone	Manic Miner

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Tony Bridge's Adventure Corner



Invisible Wizard

The Grand Elf must really be feeling his age these past few weeks, having missed out quite a few important addresses (obviously, the stocks had no effect!), so many apologies and I will rectify the situation

After the piece on *Bored Of The Rings*, several people wrote in, wanting to know more about this wonderful program, but mainly, of course, where to get it. Delta 4 reside at: The Shieling, New Road, Swanmore, Hants SO3 9PE As an aside here, Fergus McNeill, the author of *Bored*, feels that more people should be subjected to the delights of the bonus program contained on one of the two cassettes, *Sceptical*. If you cracked the code of *Spectacle*, you'll remember that the phrase was the title of a Supertramp song (old boring hippies, my son) – so apply the same logic here. To save you further brainache, the password is the title of another, rather more recent hit, *RELAX DON'T DO IT* (exactly as I've printed it here) Now go and have some fun!

The other address which I have had trouble with is Mr I G Harling's He has sent me a *Quill'd* adventure for the CBM 64, called *The Norkse Sagas* What I've seen of the program so far is not too inspiring, but the reason for me mentioning it here is that he also sent the draft of a book which has been written, presumably to go along with the adventure This is a very literate mix of *Hitchhiker's Guide* and *Monty Python* (about 60/40, I'd say), which pokes fun at most of the conventions used in Fantasy fiction. The story concerns the adventures and bad-luck stories of Ulrich, son of Smork the Unfortunate (who spends his time being turned back and forth into various kinds of creature), and his attempts to gain entrance to Usgard, the home of the Norkse Gods, attempts which are foiled at every turn by his rank bad luck and thingy, you know . the Sorcerer chappy . Like the aforementioned *Bored of The Rings*, Harling hasn't, thankfully, fallen into the trap of using schoolboy humour to get cheap laughs, and the book sustains a polished humour

Now, the only problem is in finding Mr Harling, as his covering letter has been lost in the depths of the Popular office I hope that he is reading this week's column, and that he will contact me as soon as possible.

Now, on to some help John Rundle, who had been seen in these columns several times before, is now currently working on *Erik the Viking*, from Level 9 He says, "I can do all the adventure, except remove the feather from the Dragon's nose Can anyone help me do it? I am willing to give readers any help on this adventure if they send me a SAE I see that people are still asking for help with *The Hobbit* and *Valhalla*. I can help with either " So write to John at: 26 Western Road, Aldershot, Hants GU11 3PL

Thanks for the offer of help, John – I'm afraid that *I* don't have much to offer on *Erik*, but you could always write off to Mosaic who market the game

This adventure has had a mixed reception, judging from the letters that I've had Most experienced adventures seem to think that it is just a nice little romp, which they feel that Pete Austin must have dashed off while working up to *Emerald Isle*, but I believe that it still has some good moments in it and would anyway make a good introduction to adventuring – and it makes a change from the Tolkienesque fare, although I admit I do miss Level 9's Middle Earth period

Steve Pickford of Stockport sent me a long and interesting letter some while ago, about *Erik*, including some helpful hints "I haven't solved all the problem yet, far from it I have scored 625 out of a possible 1000 – at the moment I am trying to get help from Al Kawasarmi, the great invisible wizard. To mend the boat, you need the hammer and nails together with the Planks from the broken tables The blue blade and the horn can be found by examining the bedding and the assorted rushes The horn is needed to call the other villagers to help you pull the boat to the sea.

"To get the objects from the eagle, you need to feed it mutton and to get the silver amulet from the ledge, you must throw the polished stick (boomerang)

"When in the sly enchantresses room, you must pick up the chalice before killing her or she will send you back to the beach. The mirror can be used to reflect the magical fear that the dogfighters use on you at the farthest shore

"To get the Tabby cat from the two Norse guards you must give them their two ounces of silver in the form of the bracelet At first they don't believe you about its weight, so you will have to weigh it again in front of their eyes.

"To get in the cave on the hot rock, you should wear the helmet and to get through the granite slab to the cairn, you must hit it with the hammer Once in these two locations you will need a source of light because you are attacked by a troll in the darkness. You are resurrected on you ship, where the Troll kills you again and again, thus using up all your lives An irritating feature, possibly a bug, but serves to show that you must save your position before doing anything risky

"I must congratulate Level 9 on fitting so many pictures into this game, though the colours go a little haywire on the Spectrum Although the famous Level 9 compaction techniques are in evidence, the program responses are rather primitive in places – for example, when I tried to mend the boat with just hammer and nails, I was told. 'you have no planks' so no prizes for guessing what else I need to accomplish the task.

"I have just received a copy of *Adventure Quest* for the Amstrad, now all I need is for the Amstrad to arrive The suspense is killing me!"

You must have the Amstrad by now, Steve, and I hope that you are enjoying the new adventure, one of Austin's best Thanks for all the hints, I hope that they are of use to someone If you want to help Steve in his quest for the Invisible Wizard, or want to ask for help in another situation, write to him (SAE, please) at: 11 Oldham Avenue, Offerton, Stockport, Cheshire SK1 4BG.

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ACORN Z80 Second Processor as new £258 Acorn Bitstick £250 ono Tel Mr Motorizanni 01-802 7708

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BBC MODEL 3 as new + Tape Recorder leads, cover S/W £365 ono Tel Hembi Hempstead OM2 51372

BBC B DFS 1.20 Watford 40 Track Single Disc Drive Tape Recorder Wordwise Leads Joysticks Manuals dust cover Cumpulst Desk Hardly Used Offer £500 Tel Roger Southampton 777749 (evenings)

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BBC BOS 1.2 80ph Sideways Ram Board Choice of Double Density Disc Interface £325 ono Tel Tony Selt 01 906 3725 day or 0868 31283 evenings

BBC B + Recorder + S/W £250 ono New R480 F/T Printer 2220 ono Brand new Amber monitor £65 Not Negotiable £271 Kit plus DFS £99 ono DS/00 80 Track drive £120 ono Tel Chris 04427 2687

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Ataris for Sale

FOR SALE Atari VCS 2 Joysticks 2 Paddles 1 Quickshot Combat and Demon Attack games £40 ono Aled Wilding 8 Stow Park Llanyrafon Cwmbran Gwent NP44 8SE

ATARI 260 Video Game System 6 games 4 Joysticks vgc. £45 Tel Spalding 5640 after 4pm

ATARI 800 with manuals and leads Gunshot Joystick Basic and Missile Command cartridges All still boxed unwanted gift £50 Tel 0207 500777

ATARI 1020 Colour Printer which has 13 operations in text and graphic modes plus joystick sketch pad cassette only three months old £65.00 Tel 021 378 2112

ATARI 260 with basic cartridge joystick and software £35 Tel 01 303 8247

Commodores for Sale

CBM 64 + C64 1541 disc drive + 1520 printer blank discs etc Any reasonable offers Can deliver London and SE Tel 0283 541084 evenings

CBM 64 + MPS 801 printer + cassette deck + 150 + programs Speech synthesiser cartridge 3 Games cartridges. 800 sheets of printer paper books carrying case dust covers + more Cost well over £850 bargain at £350 ono Tel 0228 780435

CBM 64 C2N 1541 b/w monitor joysticks plotter blank discs in lockable file software 75 titles including Simons extended basic plenty more Cost £1500 offers £700 Details Dave Tel 01 531 7968 evenings

CBM 64 original software for sale Combat Leader Fighter Commander Nato Commander Beachead plus Turbo copier All half price Tel 0272 837617

CBM 64 Easy script on disc Return to Eden and Snooker £25 the lot Will split if required Tel Andrew 061 301 4043

COMMODORE 64 plus disc drive cassette deck Simon's Basic and £230 of software and books inc PS2, Zork Arcade ref guide etc Cost £880 sell for £325 Tel Tyneside 4106900

CBM 64 C2N joystick £180 worth of software inc Impossible Mission Spy v Spy Suicide Express Salt Ad – mags Excellent condition £280 ono Tel 061 383 0217 after 4pm ask for Darren or Lee

16K VIC-20 C2N cassette deck Introduction to Basic cartridges Pirate Cove The Count, Omega Race 2K Cosmic Cruncher Rat Race also some cassette software £110 ono Tel Bracknell 426224 evenings

COMMODORE 64 1541 drive 1530 cassette plus lots of software on tape and disc. Sell for £330 Tel Barry on 01 358 0831

CBM 64 complete with C2N Datasette recorder joystick and games. Six weeks old cost £220 will sell for £150 or swap for Spectrum with microdrive or waferdrive Peter Tel 0582 505319

VIC 20 + C2N + 3K super expander And monitor cartridges + RF modulator and power supply manuals etc Very good condition £50 Also ZX81 + 16K Ram works perfectly £25 Tel York (0904) 32787 after 6pm

COMMODORE cassettedeck £13 Superleague and Tac 2 joysticks £6 each 43 cassettes £115 or separate £1 £5 each all excellent condition Tel 0772 323148 (Lancs)

VIC 20 cassette 8/32K Ram packs New MPS 801 printer New Philips green monitor Then word processing packs Two data bases many technical books Cost £800 new Need good printer or £260

COMMODORE 64 Datassettes pair Wico Redball pair Altai £360 original games Shadowfire Frankie II etc cost over £650 five months ago wanted £365 Plus CGL Chess King Master £60 Tel St Austell (0726) 63601

CBM printer MPS 801 hardly used including Easyscript and Simon's Basic cartridges £200 Tel Chorley 68037

COMMODORE Vic 20 for sale plus 16K 3K Ram approx £100 worth of software including joystick and starter pack Worth £300 sell for £140 ono. Tel Parkstone (0202) 748104

CBM 64 1541 disc drive + MPS 801 printer + Commodore modem software including Micro Magpie Easy Script, approx 15 blank discs in lockable storage box £480 no offers. Tel 061-368 8031 after 5pm

CBM 64 plus C2N cassette recorder plus 2 joysticks. Various software including Basic cassette As new (unwanted gift) £186 ono Tel Burgh Heath 55047

CBM 64 with C2N data recorder 6 months old + 2 joysticks £138 + lots of original games cassettes Offers Tel 01-458 2855 after 4pm

COMMODORE 64 – data cassette for sale including Commodore communications modem and over £200 worth of software Hardly used and still guarantee Tel 051 384 1572

COMMODORE 64 software seven games all original including International Soccer Ghostbusters Daleys Decathlon Hunchback Two and all only £40 Tel 01-57 3361 evenings

Dragon

CUMANA Disc Drive Dragon with Delta DOS and Cumana DOS interface and OS/9 and Stylograph all for £205 Tel West Willow (0794) 2304 evenings A fast disk system!

For Sale

QL QL Easel Abacus Archive atest updated 100% machine code version Unusual Pyion s/w + relevant documentation £5 each or £12 the lot. Tel Bordon 4930 (eves.)

AMSTRAD DMP1 dot matrix printer hardly used £130 01 502 3681 after 6 30pm

BROTHER HR-5 (RS232) printer with mains adapter £150 Also Kempston joystick interface £5 Tel Glasgow (041) 550 8125 ask for Gregor

AMSTRAD (green) perfect condition as new with boxes and eight months guarantee Plus Tasword arcade and adventure games typing tutor utilities and book Worth £390 Bargain at £200 Tel 01-883 5293

AMSTRAD CPC 464 (green) £199 DMP 1 printer £140 MP1 colour modulator £15 Sell complete for £280 All mint Kingston Blount (0844) 53289

PRISM VTX 5000 modem for Spectrum with on line hardware user to user software and magazines £37 o.n.o. Phone 0482 491748 between 6-8 30 or write to L. Whalmough 247 Victoria Avenue Princess Avenue Hull HU5 3EB

TI-99 computer Game modules and educational Very good condition Only £30 o.n.o. plus many books Phone 01 590 4336

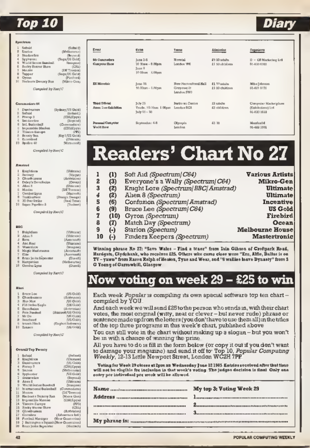
QL updated version of Abacus Archive Easel & Quill include documentation all original on microdrives Would cost £15 each new Highest offer secures Please phone Ray on 021-429 2312 after 5pm

TI99/4A module extended basic £45 Also Dow 4 Gazelle flight simulator £10 with manuals Tel 0245 266548

PSION Organiser pocket computer Inc. Mathspack + manuals. Hardly used Good condition. Tel James on Southampton 226393 after 6pm

AMSTRAD CPC 464 with colour monitor Mint condition. Only a few months old Some software Only £290 Tel. 061-881 3881 ask for Tony

AMSTRAD green screen + modulator & £100 of s/w Nearest £210 or will seperate Mr Arken Tel 0780 45431 9-5pm



Top 10

Spectrum

1 Softaid (Softaid)
2 Starion (Melbourne)
3 Shadowfire (Beyond)
4 Spyhunter (Sega/US Gold)
5 World Series Baseball (Imagine)
6 Rocky Horror Show (CRL)
7 Minder (DK'Tronics)
8 Tapper (Sega/US Gold)
9 Gyron (Firebird)
10 Herberts Dummy Run (Mikro-Gen)

Compiled by Ram/C

Commodore 64

1 Dambusters (Sydney/US Gold)
2 Softaid (Softaid)
3 Pitstop 2 (CBS/Epyx)
4 Shadowfire (Beyond)
5 Intl. Basketball (Commodore)
6 Impossible Mission (CBS/Epyx)
7 Theatre Europe (PSS)
8 Bounty Bob (Big 5/US Gold)
9 Entombed (Ultimate)
10 Spitfire 40 (Mirrorsoft)

Compiled by Ram/C

Amstrad

1 Knightlore (Ultimate)
2 Sorcery (Virgin)
3 Ghostbusters (Activision)
4 Daley's Decathlon (Ocean)
5 Alien 8 (Ultimate)
6 Minder (DK'Tronics)
7 Combat Lynx (Durell)
8 Tankbusters (Design Design)
9 3D Star Strike (Real Time)
10 Super Pipeline 2 (Taskset)

Compiled by Ram/C

BBC

1 Knightlore (Ultimate)
2 Alien 8 (Ultimate)
3 Revs (Acornsoft)
4 Atic Atac (Ultimate)
5 Wizardore (Imagine)
6 Magic Mushrooms (Acornsoft)
7 Elite (Acornsoft)
8 Brian Jacks Superstar (Durell)
9 Hampstead (Melbourne)
10 Combat Lynx (Durell)

Compiled by Ram/C

Atari

1 Bruce Lee (US Gold)
2 Ghostbusters (Activision)
3 Blue Max (US Gold)
4 F15 Strike Eagle (US Gold)
5 Decathlon (Activision)
6 Pole Position (Atarisoft/US Gold)
7 Mr Do (US Gold)
8 Beachead (US Gold)
9 Smash Hits 5 (English Software)
10 Zaxxon (US Gold)

Compiled by Ram/C

Overall Top Twenty

1 Softaid (Softaid)
2 Knightlore (Ultimate)
3 Dambusters (US Gold)
4 Pitstop 2 (CBS/Epyx)
5 Starion (Melbourne)
6 Spyhunter (US Gold)
7 Shadowfire (Beyond)
8 Alien 8 (Ultimate)
9 World Series Baseball (Imagine)
10 International Basketball (Commodore)
11 Minder (DK'Tronics)
12 Herbert's Dummy Run (Micro Gen)
13 Impossible Mission (CBS/Epyx)
14 Theatre Europe (PSS)
15 Rocky Horror Show (CRL)
16 Ghostbusters (Activision)
17 Gremlins (Adventure Intl.)
18 Football Manager (New Generation)
19 J Barrington's Squash (New Generation)
20 Brian Jacks Superstar (Martech)

Diary

Event	Date	Venue	Admission	Organisers
5th Commodore Computer Show	June 7-8 10.00am - 6.00pm June 9 10.00am - 5.00pm	Novotel London W6	£3.00 adults £1.50 children	D - CS Marketing Ltd 01-630 6163
ZX Microfair	June 15 10.00am - 5.00pm	New Horticultural Hall Greycoat St London SW1	£1.50 adults £1.00 children	Mike Johnson 01-801 9172
Third Official Atari User Exhibition	July 25 Trade, 10.00am 1.00pm July 26 - 28	Barbican Centre London EC2	£2 adults £2 children	Computer Marketplace (Exhibitions) Ltd 01-930 1612
Personal Computer World Show	September 4-8	Olympia London	£3.30	Montbuild 01-486 1951

Readers' Chart No 27

1	(1)	Soft Aid *(Spectrum/C64)*	**Various Artists**
2	(3)	Everyone's a Wally *(Spectrum/C64)*	**Mikro-Gen**
3	(2)	Knight Lore *(Spectrum/BBC/Amstrad)*	**Ultimate**
4	(2)	Alien 8 *(Spectrum)*	**Ultimate**
5	(6)	Confuzion *(Spectrum/Amstrad)*	**Incentive**
6	(9)	Bruce Lee *(Spectrum/C64)*	**US Gold**
7	(10)	Gyron *(Spectrum)*	**Firebird**
8	(7)	Match Day *(Spectrum)*	**Ocean**
9	(-)	Starion *(Spectrum)*	**Melbourne House**
10	(-)	Finders Keepers *(Spectrum)*	**Mastertronic**

Winning phrase No 27: "Save Wales - Find a tenor" from Iain Gibson of Croftpark Road, Hardgate, Clydebank, who receives £25. Others who came close were "Ere, Alfie, Dallas is on TV - yawn" from Karen Rolph of Heaton, Tyne and Wear, and "8 wallies leave Dynasty" from S G Young of Garrowhill, Glasgow

Now voting on week 29 – £25 to win

Each week *Popular* is compiling its own special software top ten chart – compiled by YOU.

And each week we will send £25 to the person who sends in, with their chart votes, the most original (witty, neat or clever – but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's chart, published above.

You can still vote in the chart without making up a slogan – but you won't be in with a chance of winning the prize.

All you have to do is fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to: Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP.

Voting for Week 29 closes at 2pm on Wednesday June 12 1985. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name .... **My top 3: Voting Week 29**
Address .... 1..
.... 2..
.... 3..
My phrase is: ....

New Releases

LIGHT SHOW

Web Dimension is one of the more bizarre games Activision has released. It has overtones of psychedelia (both the game and the joss-stick ridden genre) in that the game is largely devoted to colour and music rather than plot

The simple objective is to shunt around the strands of a web meeting up with various creatures which evolve up the ladder of evolution each time you are successful Web strands flash different colours and music plays.

The actual game is so simple it becomes very boring very quickly, but since there are no 'lives' or scores, perhaps that's not the point. If you treat it as some sort of light show with music it's OK but not stunning – the music is not that marvellous and *Psychedelia* produces better effects

The packaging is deeply irritating – it proclaims dramatically, "Over one hundred and fifty years ago Charles Darwin developed his theory of evolution . it's about time somebody made it hip". Hip? Reefers and John Coltrane albums are hip Charles Darwin deserves better And as to blurb like that gag me with a spoon, know what I mean?

WEB DIMENSION

Program *Web Dimension*
Price *£10 99*
Micro *Commodore 64*
Supplier *Activision*
15 Harley House
Marylebone Road
Regent's Park
London NW1 5HE

DESPERATE

A few more bits and pieces of independent QL software have been released recently *Hungry Harry in Haunted House* is, unbelievably enough, *Pacman.*

Obviously the whole idea of a 68008 128k machine playing this most ancient arcade game of all ancient arcade games is pretty absurd and, to be fair, the company, Snowsoft, seems to realise this

"It is not directed at the ardent games player but more as a form of light relief for the less technical players," it says

In fact, the game is pretty bad – very slow with little attempt at character animation. It compares unfavourably with early Spectrum games

On the other hand it's cheap for a QL program at £8 95 so I don't think anyone is being ripped off If you're desperate for QL games I suppose it's a maybe

Program *Hungry Harry in Haunted House*
Price *£8.95*
Micro *QL*
Supplier *Snowsoft*
6 Bousfield Cres
Newton Aycliffe

AUTHENTIC

Quest, QL disc drive manufacturer, has started producing software for the machine *Blackjack* is a (microdrive based) version of the old gambling favourite and is a cut above most of the QL stuff we've seen recently

Graphically, Quest has gone to great lengths to make what is essentially only a display of cards look interesting – when you bet you get a pile of chips (the casino variety) and you 'converse' with the dealer in little speech bubbles deciding what you'll bet and so on

Blackjack on the QL also plays a more authentic game than most other computer versions of the game You can double and split the cards, ie, try to win two separate 21s

My only grouch is that there is an upper limit of £500 to the betting which tends to restrain my usually excessive betting style and can get a bit irritating A QL game that actually looks like it's running on a powerful machine – but then it costs £18 95

Program *Blackjack*
Price *£18 95*
Micro QL
Supplier *Quest*
School Lane
Chandler's Ford
Hampshire

TEN YARD

To satisfy the blood-lust of us deprived American football fans (it happens to be the close season at the moment out there in the Land of the Free) Activision has released *On-Field Football* – an American football simulation Such games to date have been very disappointing This one, however, I like

It is not a full blown simulation, with only four players per side, but at least it bears some semblance to the real thing, in that you can pass, run or kick using the joystick to select from a number of quite complex, but easily learned plays

The action is viewed roughly from above, scrolling up and down to accommodate, and the sound (cheering crowds) is good.

In all, it looks (and plays) quite like the arcade hit *Ten-Yard Dash* – and that's a compliment

Program *On-field Football*
Price *£10 99*
Micro *CBM 64*
Supplier *Activision*
Harley House
Marylebone Rd
London NW1

This Week

Program	*Type*	*Micro*	*Price*	*Supplier*
Danger Mouse	Arc	Amstrad	£9.95	Creative Sparks
Amstrad Artist	Ut	Amstrad	£9.95	CRL
Cellias	Ad	BBC	£6.95	Sharda
Repton	Arc	BBC	£9 94	Superior
Racecount	Ed	BBC	£5.96	Vannin
The Blue and Grey	S	BBC	£9.95	BBC Soft
Beatle Quest	Ad	Commodore 64	£9 95	Number 9
Crystals of Carus	Ad	Commodore 64	£7 95	Interceptor
Napoleon's Sandwiches	Ad	Commodore 64	£7 95	Simsoft
Rocky Horror Show	Ad	Commodore 64	£8 64	CRL
Jump Jet	Arc	Commodore 64	£9 95	Anirog
Web Dimension	Arc	Commodore 64	10 99	Activision
Test Cricket	S	Commodore 64	£9 94	Audiogenic
Activity Centre	Ut	Commodore 64	£14 95	Argus Press
Triangle	Ut	Commodore 64	£19.94	Argus Press
Blackjack	S	QL	£18.95	Quest

New Releases

CHARACTER

Short's Fuse is another one of the seemingly endless conveyor belt of games from Firebird. Because Firebird releases so many titles it's possible that some real goodies might get overlooked – that could have been the case here

The reason why *Short's Fuse* is £2 50 is that it is an original and doesn't use any new programming techniques. In every other respect it's great fun.

It's ladders and platforms with a rope thrown in, with you jumping around, grabbing moving platforms and all that One new touch is that you have to collect detonators – get one and you have nine seconds to reach the next one This means you have to plan your route carefully, since if your last detonator is too far away you've had it

The graphics are surprisingly good, big and chunky with a lot of character and excellent value at £2 50 There are still a lot of companies around who'd put out this for £6 95 or more And the title doesn't alliterate!

Program *Short's Fuse*
Price *£2 50*
Micro *Spectrum*
Supplies *Firebird Software*
Wellington House
Upper St Martin's Lane
London WC2H 9DL

ENIGMAS

Fantasia Adventure is a QL adventure of some merits, not the least of which is its price. £8 50 And it's not bad as an adventure either SB Software has made some use of windowing for the different text sections, your input, items in sight, location description etc

At each location, possible directions are indicated but often you find that, in fact, a suggested direction is not available – you need the mystic key or something You can type in strings of commands like *Take the Book then Read the Book then Drop the Book* whilst text is being printed — multi tasking in action!

The plot of the adventure involves recapturing a hoard of stolen treasures and assassinating the evil emperor who is, like evil emperors everywhere, oppressing everybody in sight.

First impressions of the game were pretty good, lots of places to explore and lots of enigmas My only bother was the speed – sometimes it seemed a while between text updates On the whole a commendably cheap and good quality release.

Program *Fantasia Adventure*
Price *£8 95*
Micro *QL*
Supplier *SB Software*
20 St Nicholas St
Diss
Norfolk

Pick of the week

WHEELER DEALER

Tir Na Nog was an extraordinarily inventive program. With it Gargoyle created some of the ground rules for the true assimilation of adventure and arcade There were several ways Gargoyle got it right. Controls were reduced to around six essential keys, yet the game allowed for a wide range of actions and interactions, more in some ways than a conventional adventure – it could be solved in a number of ways The graphics were detailed and, that elusive quality, stylish enough to give the game the atmosphere and involvement necessary if you're going to keep playing it for months One last point – magic and myth so often the stuff of adventures, usually mean clichés and silliness By basing *Tir Na Nog* on authentic Celtic myth the plot had an authority and believability often lacking.

The problem with *Tir Na Nog* was one of scope – the playing area was just too large and disparate, the plot too difficult to unravel. Many people gave up impressed but exhausted. Now we have *Dun Darach*.

Dun Darach is *Tir Na Nog* tightened up with a more closely linked playing area, and made more eventful with more characters, options to trade and gamble and technical improvements in character interaction, colours on screen and animation You could say *Dun Darach* is a popularist version of *Tir Na Nog* I think, maybe *Knight Lore* and *Alien 8* excepted, it is the most superb game I've ever seen on the Spectrum.

Dun Darach is a city with banks, shops, gambling houses, an old quarter and a castle, amongst other things. It looks, as graphically represented here like a medieval town, with bottle glass windows wooden doors and shops selling arrows

ELECTRONIC

Creative Sound is a package from Acornsoft in which an excellent book is packaged

This Week

Zappit	Ut	QL	£18 95	Quest
Dun Darach	Ad	Spectrum	£9 95	Gargoyle Games
Galilee	Ad	Spectrum	£5 95	Shards
Wartard	Ad	Spectrum	£5 95	Interceptor
Arabian Nights	Arc	Spectrum	£5 95	Interceptor
Cauldron	Arc	Spectrum	£7 95	Palace Software
Dummy Run	Arc	Spectrum	£9 95	Mikro-Gen
Pipeline	Arc	Spectrum	£8 95	CSM
Tapper	Arc	Spectrum	£6.95	US Gold
Biology	Ed	Spectrum	£5 95	Sphere
Chemistry	Ed	Spectrum	£5 95	Sphere
Mathematics	Ed	Spectrum	£6 95	Sphere
Physics	Ed	Spectrum	£5.95	Sphere

Key: Ad – adventure **S** – strategy simulation
Arc – arcade. **Ut** – Utility
Ed – education

tinctures, herbs and potions The hero is again Cuchulainn who still stomps around like a grumpy skinhead but he is now joined by 11 other characters, a mixture of male and female, thieves, pickpockets, and burglars, a mystic, a courtesan and a sorceress These are all presented in the same detail and level of animation as Cuchulainn himself – they all stomp around grumpily as well

The task is to find and release Loeg, your trusted companion, imprisoned somewhere within the castle This involves tasks and sub quests and a lot of wheeling and dealing – nobody gives you anything for nothing

I'm just beginning to unravel the game There are dozens of shops, rooms and other places to explore Normally you buy goods in the local currency but if you get desperate you can always steal them, but this, as in the real world, carries a risk

So it goes, compulsive, graphically excellent and taking some of the 'animated computer movie' ideas of *Valhalla* several stages further on An essential purchase

Program *Dun Darach*
Price *£9.95*
Micro *Spectrum*
Supplier *Gargoyle Games*
74 King Street
Dudley
West Midlands

with a disc containing all the programs listed within it, so you don't have to type them in.

This is particularly useful since many of them are vast and in machine code

The book's stated aim is to 'set the BBC Microcomputer in its rightful place in the history of electronic sound development' - I think its rightful place is open to question actually, the Commodore 64 is proving far more important

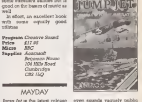
Nevertheless, it certainly is the most complete guide to using the BBC for sound you'll find The authors are David Ellis, a well known computer music journalist, and Chris Jordan, who actually created the *Sound* and *Envelope* commands for the machine

The book divides roughly into two big sections, synthesising sounds and composing The first of these deals with some of the basic ideas behind sound, frequency, wave forms and the like There are some excellent utility programs on the disc to help you use the sound chip resources more easily and make funny noises until the cows come home

This section is also good on more general material about synthesisers and the history of electronic music Similarly, the second section on composing not only provides some excellent utilities but is good on the basics of music as well

In short, an excellent book with some equally good utilities

Program *Creative Sound*
Price *£17.95*
Micro *BBC*
Supplier *Acornsoft*
Betjeman House
104 Hills Road
Cambridge
CB2 1LQ



MAYDAY

Jump Jet is the latest release from Anirog and it's one of the most playable flight simulations I've seen in a long while

Whilst the simulation of a harrier is fairly accurate, there are not so many controls that you can't get going with the game fairly quickly.

You begin with your harrier on the flight deck, the first task being to take off This section is graphically very neat, with the screen showing two windows from a position alongside and in front of the carrier

Get this section right and you get the fun stuff, which is of course blowing other aircraft out of the sky

This involves some subtle cat-and-mouse flying and much use of radar and the range finder

As you start to master flying the craft you can select higher skill levels where rough seas and cross-winds make life that bit more difficult

Jump Jet also features some pretty impressive speech at various points, which is audible, understandable and even sounds vaguely public schoolish I'm getting very used to the cry of 'mayday, mayday, I'm bailing out'

Jump Jet is a simulation which can demand a lot of skill at higher levels but which won't daunt the novice, which makes it a pretty rare thing

Program *Jump Jet*
Price *£9.95*
Micro *Commodore 64*
Supplier *Anirog Software*
29 West Hill
Dartford
Kent DA1 2EL

Compiled by Graham Taylor

New Releases is designed to let people know what software is coming on the market If you have a new game or utility which you are about to release send a copy and accompanying details to New Releases *Popular Computing Weekly* 12-13 Little Newport Street London WC2R 3LD.

This Week

Activision, 15 Harley House, maryulebone Road, London NW1 01-486 7588 **Anirog** Victoria Industrial Park, Victoria Road Dartford, Kent DA1 5AJ 0322 92513 **Argus Press**, Liberty House 222 Regent St, London W1R 7BD k 01-439 0666 **Audiogenic** 39 Sutton Industrial Park, London Road Reading, Berks 1AZ 0734 664646 **SSC Soft** 35 Marylebnone High Street London W1M 4AA 01-580 5577 **CRL** CRL House 9 Kings yard Carpenter s Road London E15 2HD 01 533 2918 **CSM**, Suite 38 Strand House Great West Road Brentford Middlesex TW8 9EX 01 560 4181 **Creative Sparks**, Thompson House 296 Farnborough Rd Farnborough Hants, 0252 543333 **Gargoyle Games** 74 King Street Dudley, West Midlands, Dudley 238777 **Interceptor**, Interceptor Micro s Lindon House The Green Tadley, Hampshire, 07356 71145 **Mikro-Gen**, 44 The Broadway, Bracknall Herts 0344 427317 **Number 9** 47 St Georges Avenue West Wolstanton Newcastle under Lyme, Staffordshire ST5 8DF **Palace Software** Scala Cinema 275 Pentonville Road London N1 01 278 0751 **Quest** PO Box 48 Torquay Devon TQ1 4UR **Shards** 189 Eton Road, Ilford Essex IG1 2UQ 01-514 4871 **Simsoft**, 4 Long Road Kinson Bournemouth BH10 5NL **Sphere** 30-32 Gray s Inn Road London WC1X 8JL 01-405 6683 **Superior**, Regent House, Skinner Lane, Leeds LS7 1AX 0532 459453 **US Gold** US Gold Unit 10 The Parkway Ind Centre heneage Street Birmingham B7 4LY 021 359 3020 **Vannin** 133 Boroughbridge Road York YO2 6AA

Political leanings

Have you questioned the politics of your micro recently? No, not the Party Politics (capital 'P') of the true blue, Tory BBC, the Socialist Amstrad (a monitor for everyman); or the SDP Spectrum (a little of each political colour) I mean the more oblique political leanings of those innocuous little boxes and their sub-culture of paraphernalia and peripherals

As a reviewer seeing many games, I've been surprised by the number with work as their theme. *Technician Ted* in the chip factory, the night watchman in *Toy Bizzare* and a whole gang of labourers in *Everyone's a Wally* to name but three This is, of course, in part a commercially determined trend The heart of these games, the manipulation of sprite graphics around a screen, is not per se particularly tempting, so the writers develop scenarios. Work provides a handy rationale because it can be concerned with repetitive, structured routines just like those of the game

But that's no reason for not asking why this particular trend in a country where unemployment, ignoring the disputed hard figures, has become a major political and hence social concern. Remember that the microchip is often seen as the prime enemy in the battle for jobs: computers equal redundancies is the popular view Programmed robots will do the repetitive, stressful tasks, we are told, but here we are, glued to our keyboards, working against time and impossible difficulty to mend gas mains deliver parcels, etc.

It's an odd reversal, the computer destroys jobs yet caters for our leisure by providing games about doing jobs.

However, the computer games players are not, for the most part, redundant lab technicians, watchmen and manual workers but those who are faced most ominously with unemployment – those still at school For some *Everyone's a Wally* could be the nearest they come to any task more challenging than signing on!

Set against this highly structured world in which everyone has set tasks and knows their place is the 'sudden death syndrome' While the worker's aim is settled, around him/her chaos reigns Toys run riot, Ted has no idea what to do and Wally's gang keep on hindering each other The odds are against the individual and failure inevitably results in the sack (or the computer's metaphor for dismissal, 'Game Over')

It's a harsh world but instead of satirising it the games urge us to try again and work for the tyrant system In life people with hard, mundane jobs grumble until those jobs are threatened, then they fight tooth and nail to keep them This pattern is transformed into a pastime; pleasure is generated from banal, repetitive tasks (and if you don't believe me, play any one of them nine to five with three weeks' holiday per annum)

Still, there's always the chance that eventually we will win and the reality of redundancy is replaced by the presence of the 'Play Again' button. So the games tell us that really we have some mastery over this hostile environment of the workplace, lulling us with a false sense of well-being while re-affirming the virtues of the Protestant work ethic and obedience to the system, however unfair and insane it may be.

The ultimate conservatism of the genre is that the reward comes not from complaining but from total obedience to the rules, which sounds like a strangely Victorian value

John Minson

Block building

Puzzle No 161.

My young nephew, Billy, discovered an interesting thing While playing with his building blocks he found that three cubes of bricks, each respectively three, four and five units along the side could all be transferred into a single larger cube with six bricks along each side

Mathematically, this is expressed as $3^3 + 4^3 + 5^3 = 6^3$, although Billy, being only two years of age is much too young to care abut such things Had he been a bit older he might have appreciated the fact that bricks arranged in cubes of orders 11 12, 13 and 14 could also be rebuilt into a single cube with 20 units along each side, and containing 8000 individual bricks

If this same series (starting with a cube of order 11) is continued even further there will again occur a point at which the number of individual bricks could be combined to form just one giant cube Can you say how many bricks would be needed to do this?

Solution to Puzzle No 156

The required digits are. 00727367190

```
10 LET A=7699
20 LET B=1
30 LET P=0
40 IF B<A THEN LET B=B*10:PRINT "0";:LET
   P=P+1 GOTO 40
50 LET D=INT(B/A)
60 PRINT D;
70 LET B=B-(D*A)
80 LET B=B*10
90 LET P=P+1
100 IF P>7010 THEN END
110 GOTO 40
```

Obviously, the standard division function in the computer is not sufficiently accurate to calculate all 7698 places of decimals which are required to solve the problem. The program calculates the answer by a process of long division, performing the calculation in much the same way that it is worked out on paper The results can be either printed out in full, or a tally can be included to just display the relevant figures

Winner of Puzzle No 156

The winner is R W Spiers of Whitstable, Kent, who receives £10

Rules

If the puzzle can be sensibly solved using a computer, the winner will have included a listing of the program used to find the correct answer

The closing date of Puzzle No 161 is July 3.

The Hackers

Hi there! - Been down at the bookshop again?

What's it to you!?

I was only asking

Well just mind your own damn' business!

SNAP!

